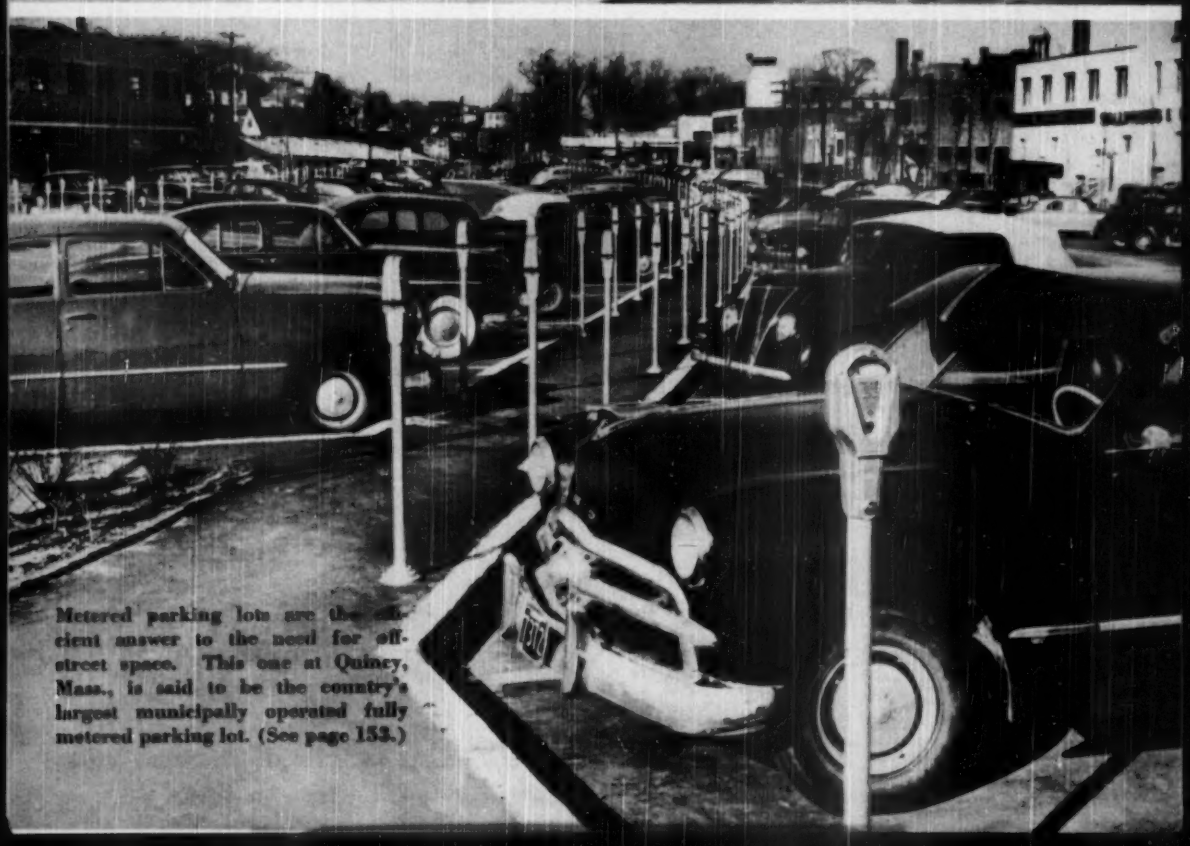
JUNE 1950

# The American City



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TRENTON, N. J.—A 27-year-old Texaco Asphalt pavement on busy Hamilton Avenue, one of Trenton's many Texaco-paved streets.

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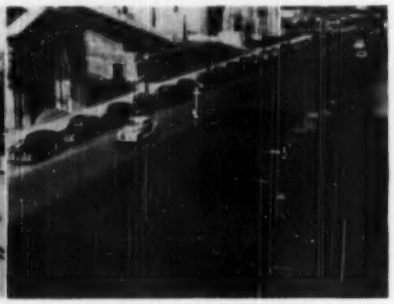

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# The American City


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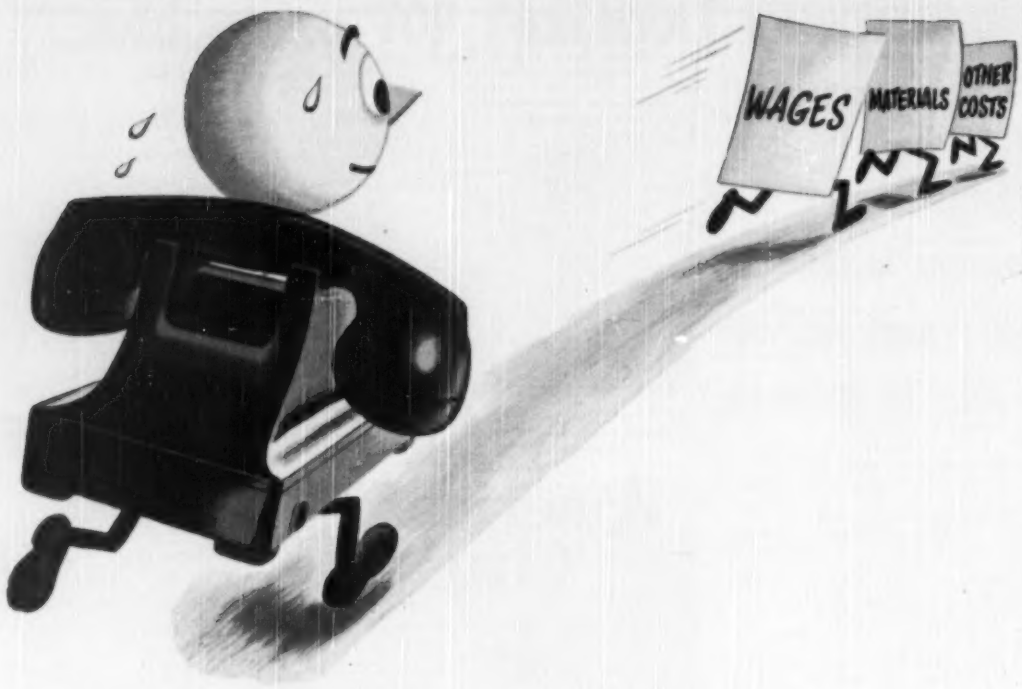


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# Our Municipal Notebook

## Action Needed to Guide Metropolitan Growth Trends

*THE trend of population growth in suburban areas is going forward whether we like it or not—the inducements and compulsions are too great to control. The growth of suburban areas is changing the nation's urban structure from that of independent central cities to one of metropolitan regions, and State and Federal legislation is needed to guide and direct the trend.*

The above were the major conclusions and recommendations of Paul Windels, prominent New York lawyer and civic leader, and president of the New York Regional Plan Association, in a challenging address on "How Should Our Cities Grow?" delivered at the annual convention of the American Institute of Architects in Washington, D. C., May 11.

Mr. Windels called upon the States to create Metropolitan District Commissions and to authorize the formation of New Town Development Corporations. He asked that the national government create a National Commission on Urban Population Distribution.

"As metropolitan regions become more and more integrated, it is inevitable that new governmental agencies will be needed to meet regional needs," Mr. Windels said. "State-created commissions should be established for each such Metropolitan District with advisory powers to coordinate planning, zoning, subdivision control and the provision on a regional basis of public projects and facilities."

"Another new instrumentality to which we should begin to give some thought is New Town Development Corporations to encourage the organized development of new towns and aiding in their establishment by correlating the interests of manufacturers, financial institutions, builders, and others looking for new investments," he said, adding:

"This would be an effective means of channeling toward such efforts federal aid in its various forms which are now, by uncoordinated application, increasing congestion in central cities and adding to urban sprawl. This is substantially the same type of instrumentality as the Urban Redevelopment Corporation now authorized by some states to rebuild blighted areas in our central cities."

In connection with suggested federal action, Mr. Windels noted that the federal government possessed "an enormous power" to influence the way cities develop by the way it applied federal aid for urban redevelopment, housing, highways and other public works.

"Literally billions of dollars of federal funds have been poured into cities for housing which have increased concentrations of population in central city areas and encouraged formless sprawl in the suburbs, both contrary to the defense interests of the nation," he said.

Citing the need for an over-all policy and objectives because of "lack of policy and complete confusion in direction," Mr. Windels pointed out that detailed planning is the job of the local communities, but added:

"To aid these local efforts at planning there should be made available the research and recommendations of a National Commission on Urban Population Distribution."

The Regional Plan president cited the defense importance of decentralization of excessive concentrations of people and industry, pointing out that "50,000,000 Americans now live on one percent of the nation's land."

The A.I.A. meeting, attended by over 2,000 architects was held during a week which featured cooperation among several leading national organizations to focus attention on the sesquicentennial celebration of the occupation of the Federal City as the seat of the national government, to review and project plans for the development of the Washington metropolitan area, and to take stock of the new opportunities for cities, counties, and states to profit by modern techniques in planning for the best use of our natural resources and man-made facilities for better living. The American Planning and Civic Association, the American Institute of Planners, the Joint Committee on the National Capital, and the American Federation of Arts were among the groups sponsoring meetings during the week.

## Housing Gets Special Consideration at U. S. Conference of Mayors

EVIDENCE OF the growing concern of the nation's leading mayors with problems of slum clearance and urban redevelopment was one of the striking features of the 1950 annual meeting of the United States Conference of Mayors, held in New York, May 11-13.

The Housing Act of 1949 was acclaimed by W. Cooper Green, Mayor of Birmingham, Ala., in his presidential message. Indeed, Mayor Green expressed the opinion that this law will in years to come be recognized as the most outstanding, constructive, and far-sighted legislation for the betterment of

## The American City Quiz

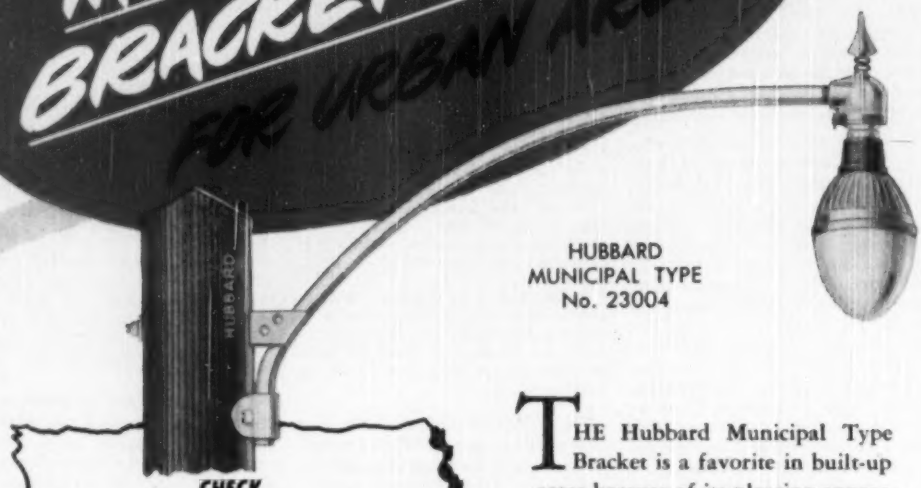
### Match Wits with the Experts

QUESTIONS

1. *What factor is conventionally used when designing the furnace area in an incinerator?*
2. *Is zeolite treatment ever used to soften a municipal water supply that requires coagulation, settling, and rapid sand filtration?*
3. *Is there any method of avoiding the ragged and ugly paving cuts customarily resulting when installing or repairing a water, sewer, or gas service?*
4. *How can one renew swimming-pool filters not thoroughly cleaned by back-washing?*
5. *Is there a practical method of making a sewer-service charge in vacation communities where the residences are occupied for only a few months each year?*
6. *What method, other than an appropriation from the general fund, is available to finance street improvements?*
7. *How much area is generally required for sewage-treatment purposes?*
8. *What principles should be followed when establishing a refuse-service charge?*
9. *What is the cost per home per month to control mosquitoes?*
10. *What is the anticipated life of hot-water coils used in sewage-sludge digesters?*

(Answers on page 9)

# THE MOST POPULAR BRACKET DESIGN FOR URBAN AREAS

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American cities that has ever been enacted by the Congress.

A special feature of the Conference was the session presided over by Mayor Martin H. Kennelly, of Chicago, at which an address by Administrator Raymond H. Foley of the Housing and Home Finance Agency was followed by a graphic presentation of a slum clearance and redevelopment project in a typical American city by Joseph M. Darst, Mayor of St. Louis, and associates.

"The slum clearance and housing program now developing," said Mayor Green, "poses a real challenge to municipal officials. It offers us our first opportunity for a start in the tremendous job of wiping out our cancerous, blighted areas and making our own communities better places in which to work and live. It is a job long overdue and in doing it we will not only attack at their roots the many social and economic problems that mushroom with the spread of slums but will accomplish constructive physical redevelopment that will contribute to the healthy growth and welfare of our cities."

### Resolutions Adopted

Fourteen resolutions were adopted at the business session of the Conference held in New York, May 13. These included one urging Federal authorities to recommend specifically "just what, if anything, American cities should do in organizing local civil defense programs." Other resolutions asked that rent control should be maintained in cities where local authorities request it; asked Congress to pass pending bills setting up a National Commission on Intergovernmental Relations in an effort to eliminate tax conflicts among federal, state and city governments, and to pass laws prohibiting shipment in interstate commerce of slot machines and other gambling devices and establishing federal controls over transmission of information useful to gamblers. Support and assistance were also pledged to the Senate investigation of national crime and racketeering.

## The Factory We Should Like to See

IDEALS for factory location and operation to which American cities can increasingly aspire were voiced by Hugh R. Pomeroy, director of the Westchester County Department of Planning, at the annual convention of the Association of State Planning and Development Agencies in New York, May 9, 1950.

Following the paper by S. B. Williams on "The Town in Which We Want to Build a Plant" (See pages 131 and 133 of this issue), Mr. Pomeroy laid down a well-considered set of specifications for "The Factory We Should Like to See." Here are four significant paragraphs:

The kind of factory we like to see is the factory that *fits*. This means far more than that it should be appropriately fitted into its immediate neighborhood and that it should be properly related to the major land-use pattern of the community in which it is located. No matter how carefully the factory—and I use the term generically as applying to all kinds of industrial enterprises—may be related to neighborhood and community physical patterns, and no matter how attractive the plant may be to the eye, it doesn't fit unless it bears a sound relationship to the economy of the community and of the region of which the community is a part. Conversely, no matter how great the economic contribution that an industry makes to a community, it has no right to render hideous its surroundings, or to disrupt sound plans designed to bring about the most beneficial use of all the land of the community, or to foul the atmosphere that it shares with its neighbors. Again, no matter how great the apparent economic contribution that an industry makes, the benefit is illusory in terms of the total economy of the community unless the industry contributes affirmatively to desirable living conditions for the community in terms both of an adequate level and quality of living environment.

The search for acceptable formulae of regulation for industrial districts leads into the whole subject of the classification of industrial uses. Marked changes in prevailing practice in industrial plant design, changing industrial processes, and the ever-widening horizon of industrial technology not only have rendered obsolete long-standing classifications of industrial uses, but will continue to do so with respect to any classification of industry by the method heretofore used, i.e., essentially with respect to type of standard or of the process. Just as the performance type of building code is replacing the specification type, we must seek the criteria for establishing a performance type of classification for industrial uses. Such a classification would be in terms of the intensity of impact of industrial uses on other uses and on one another. The following are probably the significant factors according to which intensity should be determined: size, hazard per se, production of noise, traffic generation, atmospheric pollution, production of wastes requiring disposal, psychological disturbance, susceptibility to mutation, with consideration of the effects of the association of these factors by proximity and aggregation. . . .

I propose the following principle: *that no industrial establishment should be permitted to disseminate any smoke, fumes, gas, dust, noise, vibration, or unpleasant odor beyond the boundaries of the parcel of land that it occupies.* This principle should be applied to all existing industries over such period of time—possibly a fairly long period—as will afford a reasonable opportunity for compliance, and should be a basic condition of the establishment of any new industrial use.

Such a standard of quality would tend to strengthen another requirement for the factory we like to see. The factory is not only a physical object in the community; more importantly it is the place in which those who conduct its various activities spend almost one-quarter of their entire time. It should be as pleasant a place as possible for those who work in it, compatible with the nature of its operations. In any event, it should be equipped with the facilities and services that will most effectively safeguard and promote the health, both physical and mental, of its working occupants, and it should provide adequate means for the relaxation and recreation in connection with work that both contribute to human happiness and increase the efficiency of work output. Desirable living conditions in the community must be regarded as including desirable working conditions.

## *New Officers of the U. S. Conference of Mayors*

**Shown here are the newly elected vice-president of the United States Conference of Mayors, Martin Kennelly, Mayor of Chicago (left); the new president, David L. Lawrence, Mayor of Pittsburgh; and between them, Paul V. Betters, who continues as executive director.**

# RED RIVER ON RAMPAGE-
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JIM ZEMAN

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## *Multiplication of Local Non-Property Taxes—A Dangerous Trend*

A CRITICAL commentary on current trends in state-municipal fiscal relations is presented by Morton Grodzins, Assistant Professor of Political Science at the University of Chicago, in the March 1950 issue of the *National Tax Journal*.

Recognizing the desirability of "free, responsible local government," Professor Grodzins deplores the fact that the principal contemporary means taken by states and localities to achieve such government is through the granting of wide tax powers to municipalities and the consequent multiplication of local non-property taxes.

This trend in fiscal relations is unwise [the author believes]. It is unwise for a long series of important economic reasons. It is unwise because it separates governments at a time when the logic of public finance, the legal framework of state-local relations, and the development of government as a service institution in our culture all push in the direction of cooperative government action.

The multiplication of municipal non-property taxes is unwise, most of all, because it will produce results contrary to its objective of "free, responsible local governments." The probable depression results of dependence on these taxes all augur of reverse consequences. These include reduction in the quantity and quality of municipal services and the widespread transfer of local functions to higher levels of government.

These possibilities are directly courted by the rapid extension of municipal taxes. They are indirectly courted by the emphasis of both states and localities on promoting these taxes, thus diverting their interest from more solid, if politically more difficult, avenues of approach to vigorous, local self-government.

The freedom and responsibility currently sought by American municipalities is not the freedom and responsibility to declare their own demise. Rather, it is to maintain and increase their effectiveness for the populations they serve.

## *Danish Municipal Elections Show Land-Tax Trend*

THE Danish Information Office in New York reports the results of the municipal elections held in 85 cities and towns of Denmark in March 1950, as compared with the totals of 1946, as follows:

| | *Seats* 1946 | *Seats* 1950 |
|---|---|---|
| Social Democrats | 590 | 586 |
| Radical Liberals | 60 | 61 |
| Conservatives | 250 | 285 |
| Liberals | 145 | 128 |
| Justice Union (Henry George) | 1 | 50 |
| Communists | 74 | 24 |
| Coalition lists and unpolitical | 147 | 155 |

Especially significant is the decrease in the number of seats held by the Communists from 74 to 24, and the increase in those of the Justice Union (the Henry George party of Denmark) from 1 in 1946 to 50 in 1950.

## *M.I.T. Planning Conference*

THE Department of City and Regional Planning at the Massachusetts Institute of Technology has announced its twelfth annual Fall Conference on City and Regional Planning. The Conference, which will consist of seminar sessions from September 5 through September 15, will be open to qualified professionals and others interested in the technical aspects of planning.

Subjects covered will include Housing, Zoning, the Master Plan, Subdivision Control, Traffic, Recreation, and special emphasis on Urban Redevelopment with reference to the Housing Act of 1949. The Conference will be under the direction of Frederick J. Adams, assisted by Flavel Shurtleff and other members of the M.I.T. staff. Registration fee will be $50; accommodations can be arranged in M.I.T. dormitories. Applications should be forwarded to Professor Adams at Room 7-333, M.I.T., Cambridge 39, Mass.

# *The American City Quiz*

**Answers to Questions on page 5**

1. For many years engineers frequently used the figure of 50 pounds of refuse per hour per square foot of inside furnace area. In the Winnipeg, Canada, plant, designed by Greeley and Hansen, Chicago consultants, this figure was boosted to 78 pounds. At the Tonawanda, N. Y., plant, the figure was raised to 112 pounds. Both use Nichols Mono-hearth incinerators with mechanical stoking arms.

2. Zeolite is being used at Alliance, Ohio. Much of the time the raw river water has a hardness of 300 ppm. Four of the plant's 12 filter units have been equipped with zeolite instead of sand. A salt-brine well in the vicinity is used to regenerate the zeolite. The raw water is coagulated with lime and Ferri-Floc, given four hours of settling, and then is filtered. Approximately 40% of the filtered water goes through the zeolite beds. The finished water has a hardness count of 90 ppm. Donald Heffelfinger is Engineer-Superintendent of the plant.

3. In Los Angeles, these ragged pavement cuts are avoided by using a concrete power saw. The use of the equipment is required by city ordinance, according to Lloyd Aldrich, City Engineer.

4. Chauncey Hyatt, Chicago swimming-pool consultant, recommends using one pound of lye or sodium hydroxide per square foot of filter area if the filter does not clean completely. He advises lowering the water level to a point 4 inches above the sand, adding lye and allowing it to soak for several hours, then dropping the level part way down through the bed and allowing it to soak again.

5. Soap Lake, Wash., faced this problem and solved it by making a monthly charge of $1.50 for all single-family residences. Multiple-family units are charged $3.00 per month plus $10 per year per family unit. Multiple-family units include hotels, apartments, boarding houses, cabin camps, and trailer camps. James W. Carey and Associates, Seattle, Wash., consulting engineers, established the charges.

6. Pontiac, Mich., adopted a special-assessment method to raise these funds. The method was required because the 15-mill limitation on taxes for city, school and county prevented other financing. The improvements included recapping old concrete base with asphalt, costing $1 per front foot; and constructing new concrete, at cost of $5 per front foot. All property was assessed, including religious and fraternal groups, and not including unplatted land and public property. The method was applied to Pontiac by John Bean, City Manager.

7. According to one set of figures, an acre of ground will serve 5,000 people if the treatment uses contact beds; it will serve 20,000 if the treatment uses trickling filters; and 150,000 people if the treatment uses the activated sludge process. In Daytona Beach, Fla., however, Russell and Axon, consulting engineers, have designed a plant using an Infilco upflow clarifier. With this design, one acre of ground will serve 280,000 people. The effluent from this plant, however, is not quite as thoroughly purified as that from the other types of treatment.

8. Newton, Kans., recently established service charges for refuse collection. Gerald Wilkins, city manager, set the charges on the basis of time studies covering the collection work. His calculations showed that it cost 6.4 cents per minute to operate a truck and crew. Small collections could be made in one minute. Large collections ran as high as seven. Billing is quarterly on the same bill submitted for water use.

9. It cost DeQueen, Ark., 25 cents per home per month to control mosquitoes. The work included spraying ponds, cleaning ditches, and related work. The insecticide was DDT; 1½ gallons of 25% DDT concentrate is mixed with one pint of emulsifier and 50 gallons of diesel fuel.

10. B. V. Howe of Ripple and Howe, Denver consulting engineers, places their life at 8 to 12 years. Mr. Howe feels that the heat of the water in the pipes, generally 130° to 140°, is great enough to kill bacteria and cause scale to bake on the pipe, so he recommends coils in the walls and floor of the digesters.

## How a city benefits from distributed storage

By "distributed" storage we mean that a municipality installs several elevated tanks at different locations in its water distribution system. Usually, each tank is located near the center of an area of heavy demand. Here's how the city benefits:

—the reserve in the tanks can be drawn upon to help meet peak load requirements.

—pumping equipment can be used more efficiently because each tank can be filled during a period of low demand.

—each section of the city has its own water reserve for fires and other emergencies.

—the head provided by each tank helps maintain more uniform pressures in the mains.

Amarillo, Texas provides an example of how a city uses distributed storage. The population increased from 51,686 to about 72,000 in seven years. This rapid growth placed heavy demands on the water distribution system. To help meet these demands, Amarillo erected several elevated tanks, each in a different section of the city. The 1,000,000-gal. tank shown above is one of two Horton* radial-cone bottom tanks that we erected at Amarillo.

Horton elevated tanks for municipal service are built in standard capacities from 5,000 to 3,000,000 gals. Let our nearest office show you how distributed elevated storage can mean better water service for your community.

**Trademark registered in U. S. Patent Office*

**CHICAGO BRIDGE & IRON COMPANY**

| | | | | | |
|---|---|---|---|---|---|
| Atlanta 3 | 2114 Healey Bldg. | Detroit 26 | 1581 Lafayette Bldg. | Philadelphia 3 | 1616—1700 Walnut Street Bldg. |
| Birmingham 1 | 1502 North Fiftieth Street | Havana | 402 Abreu Bldg. | Salt Lake City 4 | 501 West 17th South St. |
| Boston 10 | 1002—201 Devonshire St. | Houston 2 | 2101 National Standard Bldg. | San Francisco 11 | 1233—22 Battery Street Bldg. |
| Chicago 4 | 2127 McCormick Bldg. | Los Angeles 17 | 1503 General Petroleum Bldg. | Seattle 1 | 1321 Henry Bldg. |
| Cleveland 15 | 2236 Guildhall Bldg. | New York 6 | 3309—165 Broadway Bldg. | Tulsa 3 | 1625 Hunt Bldg. |

**Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PENNSYLVANIA**

# Water Supply and Treatment

## *Milwaukee, Wis., Boosts Meter-Reading Efficiency*

STREAMLINED practices in water-meter reading has cut the Milwaukee meter-reader force in half and at the same time has improved service, according to the International City Managers' Association.

Recommendations adopted after a survey of the water department's operation have resulted in the reduction in meter readers from 49 to 24, effecting a saving of $75,000 annually in payroll costs. The reduction in force is being made without layoffs, but through retirement or transfer of employees to other departments.

Changes being put into effect in the city's water department as a result of the study include: (1) post-card water bills will be mailed to consumers instead of delivery by meter readers; (2) meters will be read quarterly rather than monthly; (3) complaints and reports of high consumption will be handled by central water-office investigators rather than by meter readers; (4) the practice of entering meter readings in private consumers' books will be eliminated; (5) when reading is not obtained for residential consumers, a bill will be issued based on average consumption, and (6) automobiles will be used by meter readers in sparsely settled areas.

As a result of the reorganization, Milwaukee officials believe that the average number of meters read by an employee per day will be increased to 165. Previously, meter readers had been averaging about 100 meters per day while performing clerical and investigatory duties.

The average number of water meters read per day in other cities as reported to Milwaukee officials, was: Detroit—176 to 209; Los Angeles—300 to 350; Buffalo—50; New Orleans—175 to 200; Minneapolis—85 to 100; and Cincinnati—126 to 140. Milwaukee officials pointed out that these figures must be interpreted in the light of local conditions. In Los Angeles, for example, water and electric meter readings are combined, while in Buffalo, only about 20% of its accounts are metered.

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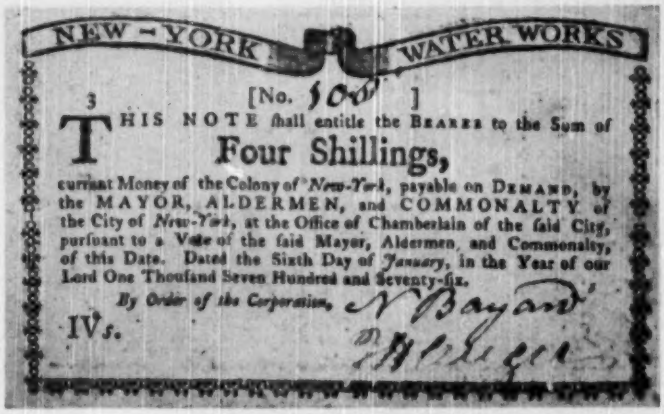
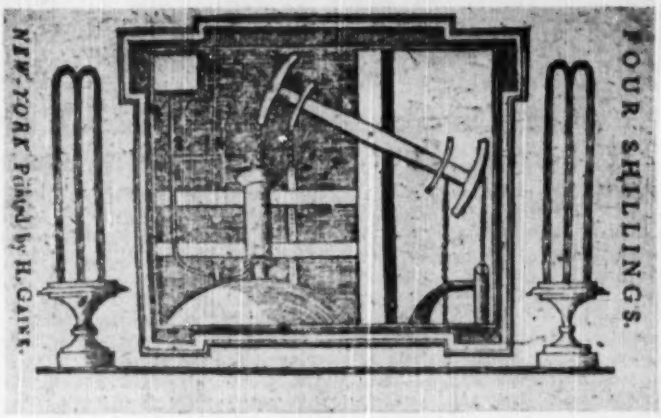

NEW-YORK WATER WORKS
[No. 500]
THIS NOTE shall entitle the BEARER to the Sum of
Four Shillings,
current Money of the Colony of New-York, payable on DEMAND, by the MAYOR, ALDERMEN, and COMMONALTY of the City of New-York, at the Office of Chamberlain of the said City, pursuant to a Vote of the said Mayor, Aldermen, and Commonalty, of this Date. Dated the Sixth Day of January, in the Year of our Lord One Thousand Seven Hundred and Seventy-six.
By Order of the Corporation,
IVs.




**Worth four shillings, backed by the integrity of New York City water works.**

## Water Supply Currency

MUNICIPAL water supply always has been a utility service that has been expected to pay its own way. But rarely has it been expected to as dramatically as it did in New York City during the Revolutionary War.

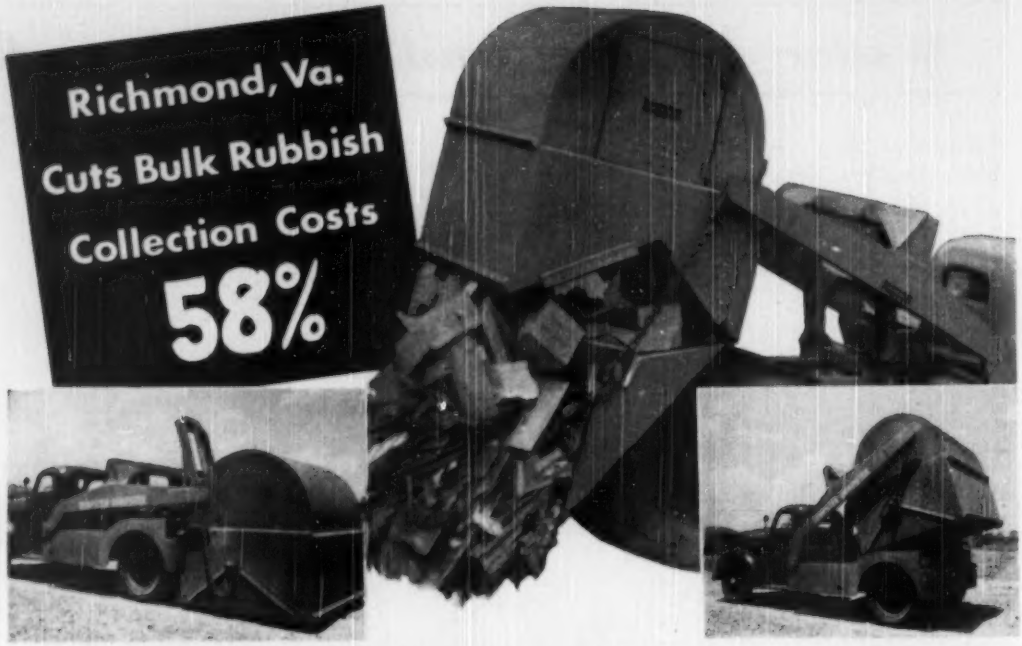
Before the writing of the Declaration of Independence, the city had committed itself to a rather substantial expense in order to build water-supply facilities. In July, 1774, a proposal to erect a reservoir and convey water through the streets of the city was adopted and ordered to be carried into effect. On August 8, 1774, the Common Council gave money to buy reservoir land.

On August 25, treasury notes to the amount of £2,500 were ordered to be issued to meet the expense. Four thousand notes each in denominations of 6 pence, 1 shilling, 2 shillings and 4 shillings, and 2,500 notes of 8 shillings each were issued, bearing the date of August 25, 1774. A second series was issued as of August 1775, and still another dated January 6, 1776.

The note shown is of the third series. The back of the note represents the machinery used to raise the water; undoubtedly one of Newcomen's Atmospheric Engines, which, since the beginning of the century, had been in general use in draining mines in all parts of Europe, and one of which was imported about 1760 by the owners of the old copper mines in Belleville, N. J.

*From A Memoir of the Construction, Cost, and Capacity of the Croton Aqueduct*, by Charles King, date 1843.

# Richmond, Va. Cuts Bulk Rubbish Collection Costs 58%



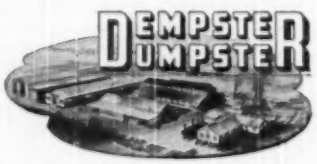
## . . . 196 Dempster-Dumpster Containers Spotted Throughout the Business Area Did the Job!

When the City of Richmond, Va. replaced their conventional open truck method of bulk rubbish collection in the business area with the Dempster-Dumpster System, it cut collection costs from $1.02 to .43 a cubic yard. From the first day the 196 Dempster-Dumpster containers were spotted at various business houses, as well as schools, apartments and hospitals, tremendous savings and amazing efficiency were evident. Six truck-mounted Dempster-Dumpsters with only one man each, the driver, service these containers, making scheduled rounds picking-up, hauling and dumping one pre-loaded container after another. The tightly closed steel containers, ranging from 6 to 12 cu. yds., eliminated objectionable odors, rats, and stopped trash and rubbish from being littered over streets and alleys by winds and scavengers.

This new system got the immediate and enthusiastic support of the local business people. Some 30 letters were received by the city during the first 60 days of service commending the Department of Public Works for installation of the Dempster-Dumpster System. The following are typical comments of the people:

*"We can sincerely say that this is the finest service ever rendered us by the City Refuse Collection Dept. We can recommend this service to anyone who wants to get rid of trash in the most economical way. We are delighted with the Dempster-Dumpster System and would not return to the old method of refuse collection under any circumstance. . . . This equipment has come up to our expectations 100%. We have placed orders for 6 more containers."*

The Dempster-Dumpster principle—quick pick-up of containers pre-loaded by users—is applied not only in business areas, at hospitals, schools and apartments, but wherever bulk refuse accumulates . . . including market and housing areas . . . and at tremendous savings! Pick-up, hauling, and dumping action is shown in the photos above. Write today for "What They Think of the Dempster-Dumpster in Richmond, Va." The Dempster-Dumpster is another product of Dempster Brothers, Inc.




**One Dempster-Dumpster Services All Containers . . . All Designs . . . All Sizes**

**DEMPSTER BROTHERS, 860 Dempster Building, Knoxville 17, Tenn.**

# Street Cleaning and Refuse Disposal

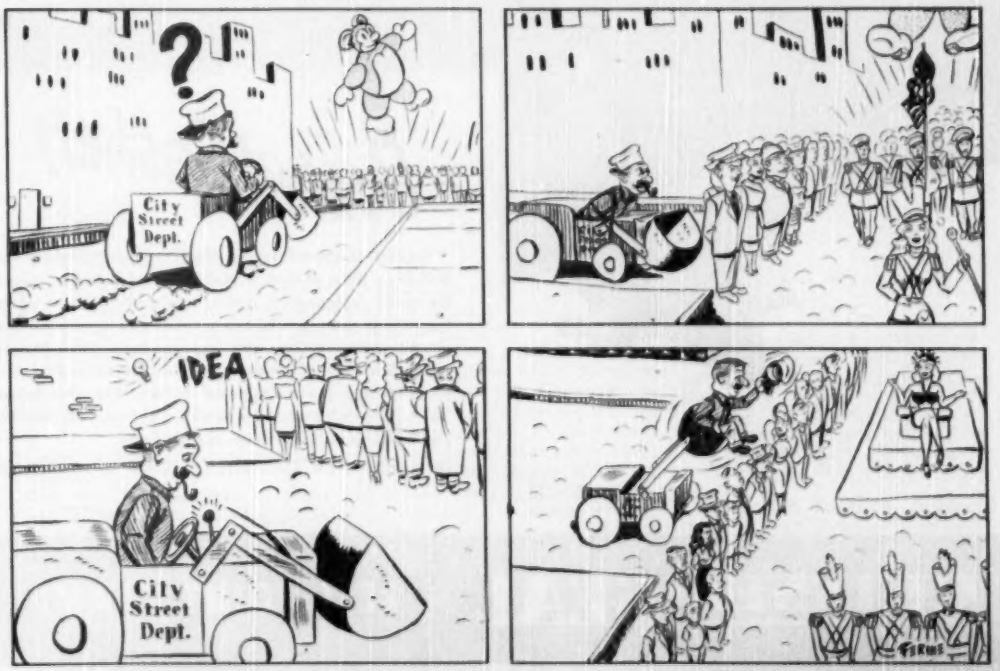
## *Compactor Trucks Win In Kansas City Tests*

KANSAS CITY, Mo., will save money by adopting packer-type refuse trucks, according to City Manager L. P. Cookingham. Recent tests reported in his monthly *News Bulletin* show substantial savings. The test covered the daily collection at the general hospitals, the airports, and the auditorium. The usual time required with open-type trucks was a minimum of six hours because of the hauling time necessary to make two or more trips to the city sanitary fills. Gar Wood Load-Packer trucks performed the same work in two hours. The trucks have a total capacity of approximately 10 cubic yards of compacted material as compared with a load of three or four yards of loose material in an open-body truck.

The tests were conducted by the Street Cleaning Section of the Streets and Sewers Division. The results indicated a saving of at least 50% and furnished absolute insurance against scattering of litter during travel.

## *Pine Bluffs, Ark., Gets Street Sweeper*

IF YOUR city is between 10,000 and 25,000, the chances are about 50–50 that you have a mechanical street sweeper to aid in your sanitation program. Last summer, Pine Bluffs, Ark., population 25,000, swung over into the column of the sweeper owners by acquiring a new Model E Guttersnipe. Inspection by Mayor G. H. Steed, right, and Street Superintendent A. Marriner, left, is shown above.



# Sealed Gasket!

**Gasket is completely sealed and protected; at the bell face by a Monel Metal Seal Band; at the spigot by hard, vulcanized gasket tip, acting as a plug. Equalized pressure forces gasket into every crevice in the joint, sealing the leak at its source. Sturdy malleable iron Compression and Anchor Rings—shaped and pressure-tested before shipping. Large ¾" high-tensile steel bolts, cadmium plated. Speedy one-man installation cuts repair costs.**

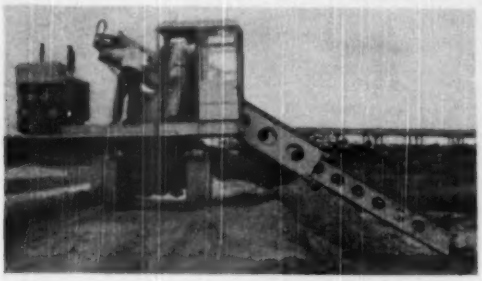
**M. B. SKINNER CO., SOUTH BEND 21, INDIANA**

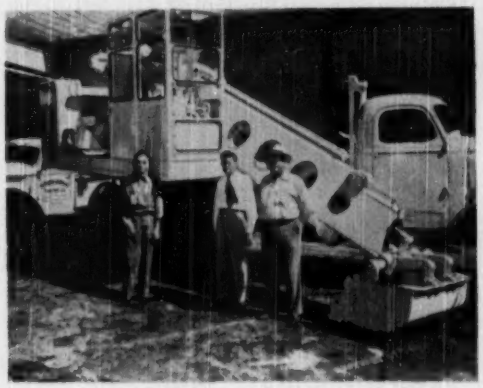
## SKINNER-SEAL BELL JOINT CLAMP

# Street Construction & Maintenance

## Lakeland's Multi-purpose Grader

**City officials inspect the grader at the time of its purchase. Left to right are A. C. Miller, Superintendent of the municipal garage; Charles Larsen, City Manager at the time of purchase; and John Stokes, Superintendent of Streets, Lakes, and Parks. Below: The Gradall in operation at the city clay pit.**





SO versatile that the Lakeland, Fla., Street and Engineering Departments would be lost without it, is the way that City Manager D. L. Spinks describes his city's three-year-old Gradall. The machine has been in use practically every working day and has saved the city many thousands of dollars. It has turned its hand at everything from digging ditches to grading streets. Its easily operated and controlled telescopic boom has made it particularly useful in residential areas, where the conventional equipment frequently runs into trouble with overhanging tree branches and shrubbery.

### *Erie, Pa. Looks at the Record*

A TEN-YEAR test of asphalt emulsion soil stabilization used on the streets of Erie indicates that for our purposes, the improvement was a good investment. When we laid the street, we used crude tools, operated with WPA labor, under untried specifications. Today one should be able to lay the same pavement and get double the service life.

This work was performed in 1938 when I held the post of City Engineer. The street we selected was about two miles long and served a residential neighborhood that showed signs of development. It promised to and ultimately did develop into an arterial street. It was at a satisfactory grade, had workable side ditches for drainage, and had been surfaced with a poor grade of gravel laid on a subgrade of clay, subject to heaving when the winter's frost appeared.

Our tests showed the following sieve analysis of the top 4 inches and the lower subgrade:

| *% Passing* | *Surface* | *Subgrade* |
|---|---|---|
| 1-inch screen | 95 | 100 |
| ¼-inch screen | 80 | 94 |
| #10-screen | 63 | 87 |
| #200 screen | 24 | 35 |

Judging from further tests made, we decided that approximately 5% of stabilizer by weight, when combined with the clay-gravel, would provide the required stability. On that basis we decided to use 2.4 gallons of asphalt emulsion stabilizer per square yard for a 4-inch compacted thickness. This provided about 4.6% of stabilizer by weight. Today, I understand that specifications call for 6%.

We scarified the gravel surface with a spring-tooth harrow and then applied emulsified asphalt with a pressure distributor in three or four applications. After each application, the spring-tooth harrow went into action to supply a uniform mix. We then shaped the surface with a blade grader and compacted it in one pass with a steel-wheeled roller. This was difficult and never produced really uniform results. Today's practice of laying out the material in thin lifts and compacting it with a rubber-tired roller looks lots better.

After rolling and drying the base to about 5% maximum moisture, we then primed the base with an immiscible emulsion primer. I believe that today's practice requires a top moisture figure of 3% instead of five. We then covered the primed surface with a quick-setting grade of emulsified asphalt and stone-chip cover.

If we had to do the work over again, I feel that we would add enough granular material so that the amount passing the 200-mesh screen does not exceed 25%, and that about half of this be cohesive clay. We would probably be able to specify the thickness a little more intelligently now that we have more knowledge of the bearing value of the subgrade.

C. K. PULLING
*Mayor*
*Erie, Pa.*

### *Rubberized Streets For Five Cities*

FIVE cities instituted in the year 1949, test projects using rubber mixed with asphalt on city streets, according to J. E. Misner of the Xylos Rubber Company, Akron, Ohio. The five cities to test the rubber this summer are Richmond, Va.; New York City; Worthington, Minn.; San Antonio, Texas; St. Rose, Province of Quebec, Canada.

This company already has participated in rubber road test projects in Akron, Columbiana, and Tallmadge, Ohio, and plans other tests in Florida and California.

Mr. Misner reports that observations to date show that the addition of powdered processed rubber made the asphalt less susceptible to temperature changes and therefore less likely to bleed in summer.

# RESIDENTIAL AREAS *NEED* FIRE ALARM BOXES

**FIRE**
***Destroys***
**ANNUALLY**
**11,000**
**Human Lives**
**700 Millions**
**of Dollars**
**in**
**Property Values**
***and***
**FIRES**
**IN**
**DWELLINGS**
***Cause***
**⅔ of the**
**Life Loss**
**¼ of the**
**Property Loss**

**For visibility, boxes should be mounted on pedestals with indicating lights on top.**

***A fire alarm box, accessible from every home,***
**IS ESSENTIAL PROTECTION.**

***Write for Pamphlet***
**"Checking the Fire Alarm System"**

## THE GAMEWELL COMPANY

**Newton Upper Falls 64, Massachusetts**

In Canada: Northern Electric Company, Ltd., Belleville, Ontario

# Public Safety

## Smoke Extractors Reduce Damage

THERE are very few fire chiefs who have not often wished, while listening to housewives complain of smoke damage, that there was something they could do about it.

After acknowledging many of these complaints, we started looking for an answer. We found that smoke should be eliminated not so much to avoid its damage as to attain better control of the fire. We also learned that where there was a high wind there was less smoke damage. This suggested ventilation.

At that time we were not using mechanical smoke extractors, but we did know that smoke damage could be reduced by fast removal of the smoke from within the building.

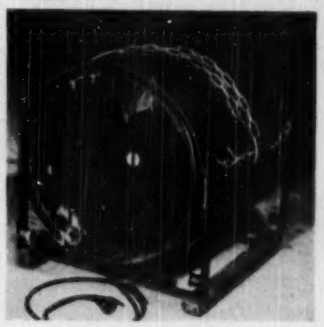
About 94% of the fires we fight are extinguished with something smaller than a 2½-inch line; the next 4% with a 2½-inch line; the remaining 2% are extinguished with everything you have and all you can borrow from neighboring cities. Regarding the dollar-and-cent relationship between fire damage and smoke damage, records show smoke damage leading fire damage in fires of the 94% classification.

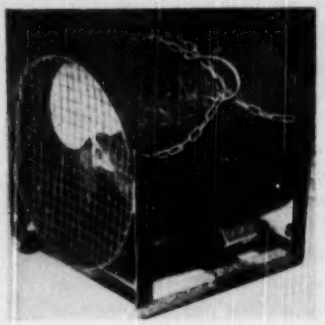
The barriers between firemen and the fires they fight are *smoke, heat* and *gases*. All three are produced from the burning of some material or parts of the structure. The extinguishment of most fires would be a simple operation if we could readily remove the smoke, heat and gases from the areas of advancement to the fire. Every fire falling into the classification where it can be extinguished with something smaller than a 2½-inch line should be ventilated or opened up as soon as the lines are in position and the water is at the nozzle. Where only one 2½-inch line is needed and proper extinguishment with one line is possible, immediate ventilation is advisable.

### Mechanical Extractors

Natural ventilation is not sufficient for the speedy removal or reduction of smoke damage. The solution is to employ mechanical smoke extractors, initiated by the Minneapolis Fire Department in 1915-16, when Chief Ringer put a large homemade one into use.

Today, there are several different makes and models on the market. All work well if used properly at a fire. In my opinion they are the most valuable pieces of equipment a department can have for the over-all reduction of fire-loss figures.





**Front and rear views of one of Fargo's smoke extractors.**

They are generally rated according to the number of cubic feet of air they will move in one minute's time. The four more common sizes are: 2,500, 3,500, 5,000, and 10,000 cfm. The smaller sizes are electrically driven; the larger by gasoline engines. The 3,500 cfm size are large enough to do an efficient job, and light enough to be handled easily by two men. We have one rated at 1,000, four at 3,500, and one rated 10,000 cfm. Extractors are carried so as to have them all at a fire in the downtown district on first-alarm assignments. In the residential areas we have three available for use. If we need more, we obtain them by radio.

During the past year and a half we have reduced our smoke damage claims on an average of 40% through the use of smoke extractors; on several occasions 100%, or no claims submitted or paid.

FRED J. WELLS, *Chief*
*Fargo Fire Department*
*Fargo, N. D.*

## *Built-in Dwelling House Fire Protection*

WHAT fire-protection features are available to the dwelling house? Eight were easily revealed when the question was put to Ohio's Fire Chiefs by the Metal Sash Manufacturers Association, 636 Engineers Building, Cleveland, Ohio. Below are the feature recommended and incorporated in the Fire Chief's House, displayed by the Home Builders Association of Greater Cleveland at the Annual Home and Flower Show in Cleveland's Public Hall, March 4-12, 1950.

1. Fire-retardant roofing.
2. Protected open shafts such as laundry chutes and openings around vertical pipes.
3. A built-in incinerator for rubbish.
4. Automatic fire-alarm protection.
5. Metal-lath and plaster fire-stops between studs to retard fire from spreading upward.
6. Automatic cut-off valve for the gas meter.
7. Sprinkler heads over the heating plant and in the stairwell.
8. A full ceiling of plaster of metal lath in the basement and similar ceilings throughout the house.

Asked for comment on the above list, Chief Elmer M. Cain of the Cleveland Fire Department offered the following additional recommendations:

9. Five-inch clearance between metal heat risers and wooden studs. Asbestos tile board shielding outside wall metal lath, and plaster will be in front of riser, leaving no cause for fire.
10. Double fire tops eight inches above wall registers.
11. Electrical outlets coming from wall securely anchored to studding to prevent shifting.
12. Electric light in ceiling of all closets to discourage the use of candles, matches, etc., while looking for things in dark corners.

# You Get these Big Bonuses

## only with ALLIS-CHALMERS POSITIVE SEAL 1000 HOUR LUBRICATION . . . . .

Allis-Chalmers Model HD-5 — 48.26 drawbar hp. — with Baker engine-mounted bulldozer.

On all Allis-Chalmers crawler tractors, you can operate six months on a 40-hour week basis with just one lubrication of truck wheels, front idlers and support rollers — units that are normally subjected to the greatest wear and are most difficult to service properly. Think what this elimination of daily or even weekly attention means in labor and lubricant savings . . . and in working time gained! Think of the safety factor, too — no costly damage by greasing neglect.

## Look At These Bonuses

**DAILY GREASING PERIODS ARE ELIMINATED** . . . there's less downtime, more productive operating time.

**SAFETY FACTOR AUTOMATICALLY PROTECTS TRACTOR OPERATION** . . . adequate lubrication is assured for long operating periods . . . no costly damage by greasing neglect.

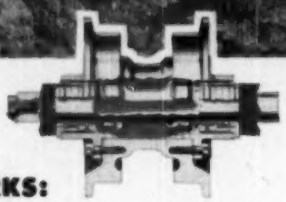
**REPAIR PARTS EXPENSE HELD TO MINIMUM.** Operator can safely select convenient time and spot to replenish lubricant.

**FULL PROTECTION IS ASSURED** . . . grease kept in, dirt kept out. Daily cleaning of grime and dirt from truck frame to get at grease fittings is eliminated.

**LUBRICANT COST REDUCED.** Units are grease packed at the factory. Thereafter lubricant need be replaced only once every 1,000 hours.

**REDUCED FRICTION DELIVERS MORE POWER.** Equipped with tapered roller bearings, wheels rotate smoothly inside and out. Bearings are located directly under the load—reduce side thrust and wobble—last longer . . . easily serviced.

**ADDED UP, THESE BONUSES MEAN SAVINGS IN MATERIAL AND LABOR COSTS PLUS GREATER TRACTOR PRODUCTION. THOUSAND HOUR LUBRICATION ADDS MORE THAN TWELVE FULL DAYS TO THE TRACTOR'S OUTPUT EVERY SIX MONTHS.**



## HERE'S HOW IT WORKS:

Designed and constructed with tapered roller bearings and Positive Seals, the truck wheels, front idlers and rollers are not affected by dust, loose sand, soft ground, mud or water.

The seal consists of two steel rings, hard and smooth as glass, held together tightly by steel coil springs. One seal ring is stationary, one turns with the wheel. The sealing surfaces are ground to within several millionths of an inch of perfect flatness and are lubricated, as are the tapered roller bearings, from a large grease reservoir sealed inside the wheel.

### Flush Lubrication Protects Positive Seal Faces

Pumped easily into the shaft channels, lubricant washes smoothly through the rear and front roller bearings, then back to the shaft, flushing out past the grease gun nozzle. Old grease is replaced by clean, fresh lubricant. Low-pressure, flush-type lubricating action eliminates seal popping . . . keeps seal face smooth and clean of grit and dirt . . . reduces wear . . . increases seal life.

**ALLIS-CHALMERS**

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

For Greater Production • For Easier Operation • For Simplified Servicing

## How Well Does Your Trickling Filter Work?

FOR that matter, how well does your activated sludge-tank work, or any of the biological processes that use oxidation to purify the sewage? A quick method of determining their efficiencies was presented recently at the New Jersey Sewage Works Association meeting, held in Trenton.

The presentation was made by W. W. Eckenfelder, consulting sanitary chemist of Ridgewood, N. J. It is based on an oxidation curve developed by John W. Hood, superintendent of the Ridgewood (N. J.) sewage-treatment plant, and Mr. Eckenfelder, and gives a quick, close approximation of how well the trickling filters and activated-sludge tanks are performing.

These definitions of terms aid in using the curves:

*Oxidizable methyl orange alkalinity (O. M. O. A.)*—that portion of total alkalinity removable by biological oxidation.

*Organic alkalinity*—alkalinity of influent minus inorganic alkalinity of the water supply.

*Carbon oxidation*—approximate per cent of carbonaceous material oxidized. 90% indicates approximately 90% 5-day BOD removal by oxidation.

*Per cent oxidation*—per cent of ultimate oxidation affected with respect to time using oxidation by aeration as a base.

*Per cent nitrogen oxidation*—per cent of total nitrogen oxidized.

A table of approximate factors is provided for use when the nitrogen content of the sewage is unknown.

*Oxidizable M.O.A.*—alkalinity (Water alkalinity-factor (f))

| *Organic Alkalinity* | *Factor (f)* |
|---|---|
| 50 | 10 |
| 50–100 | 20 |
| 100–150 | 40 |
| 150–200 | 50 |
| 200 | 60 |

*Applying the Sewage Oxidation Curve.*—Starting from the Oxidizable M.O. Alkalinity ordinate, proceed horizontally to the Alkalinity curve; *per cent oxidation* is read from the *abcissa* scale at the bottom of the graph. Starting at "per cent oxidation," proceed vertically to the Nitrogen curve; *per cent nitrogen oxidation* will be read at the right.

EXAMPLE 1

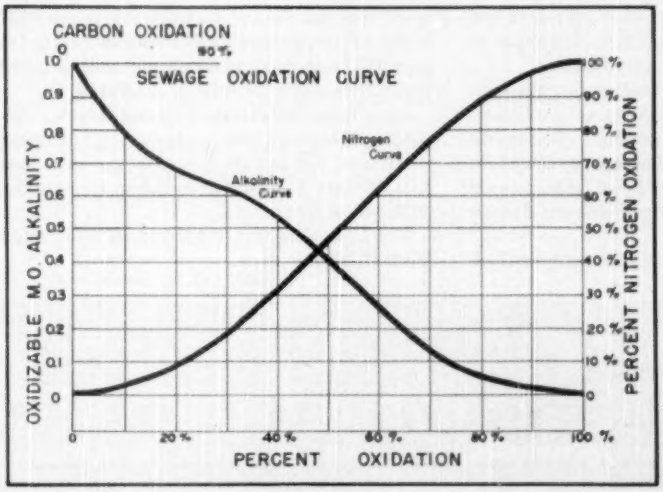
Raw Sewage Alkalinity = 255 ppm
Water Supply Alkalinity = 80 ppm
Final Effluent Alkalinity = 114 ppm
Organic Alkalinity = 225-80 = 175 ppm
F = 50

(1) Oxidizable Alkalinity
raw = 25.5 — (80–50) = 225 ppm

(2) Oxidizable Alkalinity
effl.= 114 — (80–50) = 84 ppm

$$\textit{Residual O. A.} = \frac{84}{225} = 0.375$$

Per cent Oxidation = 52%
Per cent Nitrogen Oxidation = 48%




Carbon Oxidation = Greater than 90%

EXAMPLE 2

Raw Sewage Alkalinity = 230 ppm
Water Alkalinity = 20 ppm
Final Effluent Alkalinity = 135 ppm
Organic Alkalinity = 230 — 20 = 210 ppm
F = 60

(1) Oxidizable Alkalinity
(raw) = 230 — (20–60) = 270 ppm

(2) Oxidizable Alkalinity
(effl.) = 135 — (20–60) = 175 ppm

$$\textit{Residual O. A.} = \frac{175}{270} = 0.65$$

Per cent Oxidation = 25%
Per cent Nitrogen Oxidation = 13%
Carbon Oxidation = Less than 90%

## *Isotopes Used for Water And Sewage Studies*

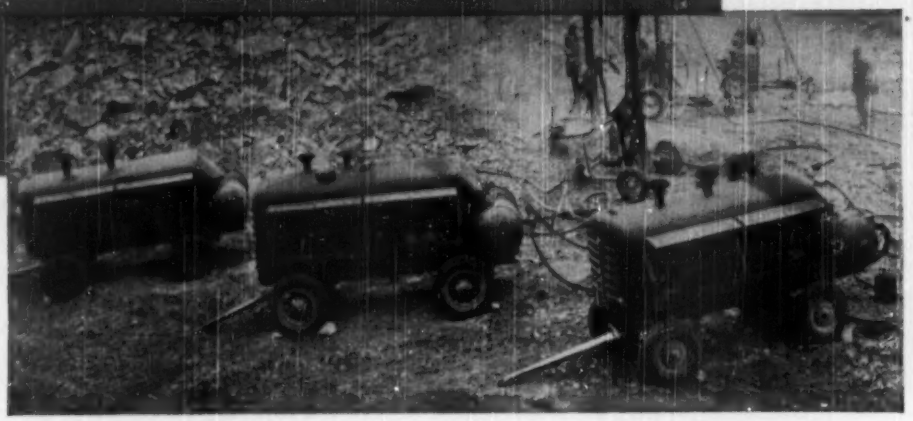
THE use of radioactive isotopes has several advantages over the use of salts and dyes in various water- and sewage-treatment studies. Harold A. Thomas, Jr., and Ralph S. Archibald, Jun. ASCE, decribed the use of the isotopes before the Sanitary Division of the American Society of Civil Engineers at its recent annual meeting in New York City. Their work was based on the results of tests conducted at Harvard University.

The foremost advantage is perhaps the fact that radio-isotopes can be detected in extremely small concentrations. A clear signal (100-1,000 radiation per min.) can be obtained from $10^{-10}$ or $10^{-11}$ milligrams per liter. These low concentrations do not cause observable density currents which may disturb flow patterns.

In addition, the presence of radio-isotopes can be easily identified by many types of modern Geiger counters which give precise results. Passage of tracer clouds can be detected through conduit walls, eliminating the necessity of sampling the flow. Further, no chemical or biochemical reaction occurring in the flow interfere with the rate of disintegration of the isotope; temperature changes have no effect; and the absorption of the tracer on solid surfaces can be made negligible by proper choice of isotope.

There are, of course, disadvantages involved, such as the great care required to protect laboratory personnel from overexposure to radiation, and though the cost is usually quite reasonable, in some instances the expense runs high when the energy is dissipated during long shipping delays.

# ASSURE *DEPENDABLE* OPERATION AT *LOWER COST*



## Use the TEXACO air compressor oil recommended for your operating conditions

No *ONE* oil can lubricate satisfactorily under all the conditions of air compressor operation. So Texaco has developed *a complete line* of air compressor oils. When used as recommended, you can be sure of dependable, top-efficiency operation and lower maintenance costs, regardless of the type of compressor or the operating conditions.

Your Texaco Lubrication Engineer, for example, will recommend Texaco straight mineral oils for normal conditions . . . Texaco inhibited oils for rust prevention . . . Texaco special heavy-duty oils where service is severe and carbon and gum formations are problems . . . and Texaco compounded oils if excess moisture is present.

Thus, use of the *right* Texaco air compressor oil assures free rings . . . clean valves and clear air lines . . . reduced wear for all moving parts . . . lower costs all around.

For longer drill life, and more footage drilled at lower cost, use *Texaco Rock Drill Lubricants EP*. These are "extreme pressure" lubricants designed to give full protection against wear and to guard against rust under the severest conditions.

Let a Texaco Lubrication Engineer help you simplify and improve your maintenance lubrication procedures. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

**TEXACO Lubricants and Fuels**

FOR ALL CONTRACTORS' EQUIPMENT

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.

# Get This Literature – Free!

**Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write directly to the manufacturers, or circle the identifying numbers on this coupon and mail to THE AMERICAN CITY MAGAZINE, 470 Fourth Ave., New York 16, N. Y. We will see that catalogs are sent to you without expense or obligation.**

6/50

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| 130 | | 131 | | 132 | | 133 | | 134 | | 135 | | 136 | | 137 | | 138 | | 139 | |
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**Name** ..... **Position** .....

**Address** .....

### "Will Parking Meters Survive?"

**141** An interesting little story tells the good results when Middletown, Conn., faced its Hurricane meters toward the stores and away from the cruisers. Get it, and also the booklet "Will Parking Meters Survive?" from M. H. Rhodes, Inc., Hartford 6, Conn.

### Electric Cleaning of Sewers

**112** The O'Brien sewer-cleaning machine clears blocked sewers up to 10 inches in diameter and 200 feet long—without manual effort. Electricity turns the cable and cutting knives and retrievers. Write for a folder about the Root-Master to the O'Brien Mfg. Co., 5016 No. Austin Ave., Chicago 31, Ill.

### Ozone for Water Purification

**113** Ozonated water eliminates unpleasant taste, color, and odor. The recent installation at Philadelphia forms the basis for a booklet that may help you solve your municipality's problems. Write for *Philadelphia Finds the Answer* to the Welsbach Corp., Ozone Processes Div., Municipal Water Systems Research Dept., 1500 Walnut St., Philadelphia 2, Pa.

### For City Trenching

**114** The Parsons heavy-duty 221 Trenchliner excavates along curbs, pole lines, and next to buildings in streets and narrow alleys. And the machine can be operated at 30 digging speeds from 5 inches to 12 feet per minute. Write the Parsons Co., Newton, Iowa.

### Push-Button Control of Valves

**115** The *Limitorque* catalog shows in 90 pages how valves can be operated quickly and easily by merely pushing a button. The device is applicable to water and sewerage installations. Write the Philadelphia Gear Works, Inc., Erie Ave. and G St., Philadelphia 34, Pa.

### Kill Mosquitoes at the Source

**116** The Tosit capsule tossed into water in ditches, catch basins, canals, rain pools, or large swamps eliminates mosquitoes. No equipment is needed and the effect is fast. Write the Southern Entomological Co., 2400 Tamarind Ave., W. Palm Beach, Fla.

### Badges for Officials

**117** The C. G. Braxmar Co., Inc., 216 E. 45th St., New York 17, N. Y., will send you a circular illustrating its line of badges for police, fire, and other officials.

### Kitchen Garbage Elimination

**118** The Waste King Pulverator, a product of the Given Mfg. Co., 3855 Santa Fe Ave., Los Angeles 11, Calif., does away with the garbage can and the garbage-collection truck. The mechanism handles hard, fibrous, and bulk material.

### Tapping Machine

**119** The Hays Model B tapping machine for inserting all standard makes of corporation stops has two ratchet wrenches to speed up operations. The machine is fully loaded ready for operation before placing on the main, so there is no disassembling. Write the Hays Mfg. Co., Erie, Pa.

### Water Works Goods

**120** Among the products made by the Mueller Co., Decatur, Ill., are tapping and drilling machines, corporation and curb stops, gooseknecks and branch connections, lead flange couplings, solder nipples, brass plugs, calking tools, pipe jointers, regulators, relief valves, sluice gates, and operating mechanisms.

### Catch-Basin Cleaning

**121** The Netco catch-basin cleaner, with pneumatic controls, can be mounted on any short-wheel-base truck having 8 feet in the back of the cab. And—to release the truck for other duties—the unit can be removed in 30 minutes. Write the Netco Div., Clark-Wilcox Co., 118 Western Ave., Boston 34, Mass.

### Locating Underground Pipes

**122** The M-Scope pipe locator is a one-man-operated detector of underground pipes. With the use of this mechanism, the danger is eliminated of accidental breakage during excavation work. And the time and money consuming hunt-and-peck method of location becomes a thing of the past. Write for literature to the Fisher Research Lab., Inc., Palo Alto, Calif.

### Waste Receptacle Closes Itself

**123** The Solar self-closing waste receptacles have only one moving part that swings open for the insertion of refuse. Operating on gravity and a bearing, this design eliminates springs or hinges to get out of order. Write for information to the Solar-Sturges Mfg. Div., Pressed Steel Car Co., Inc., Dept. AC, Melrose Park, Ill.

### Diagram Accidents With Rubber Stamps

**124** The Forbes Stamp Co., 209 N. Ottawa, Grand Rapids, Mich., makes a kit that includes a stamp pad and 16 rubber stamps. This enables police to diagram accurately and completely the location of all cars and pedestrians in an accident. Eleven of the stamps picture different types of vehicles. The kit is official police equipment in a number of states.

### Water-Pressure Valves

**125** Among the valves made by the Golden-Anderson Specialty Co., Keenan Bldg., Pittsburgh 22, Pa., are single acting semi-throttling and double acting differential altitude valves, and water pressure reducing, reducing and relief, reducing and check, and reducing and double acting water level control valves.

### Make Joints With a Wrench

**126** The only field equipment necessary to make a Universal cast-iron pipe bolted joint is a ratchet wrench: no calking or pouring of lead, no gaskets, no bell holes. And the flexibility of the pipe, which is furnished hot tar dipped, cement lined, and enameline lined, permits laying curves without fittings. Write for a catalog to Dept. C, the Central Foundry Co., 300 Fourth Ave., New York 16, N. Y.

### Increase Pipe Carrying Capacity

**127** Centriline restores the original carrying capacity of old water mains by the centrifugal application of a cement lining that defies corrosion and tuberculation. And the homogeneity of the lining covering seams, joints, and rivet heads sometimes may even increase the capacity beyond the original rate. Write the Centriline Corp., 140 Cedar St., New York 6, N. Y.

### For Fire Control You Need Good Equipment

**128** One of the fire trucks put out by the Mack Mfg. Corp., Fire Apparatus Div., Long Island City 1, N. Y., is specially fitted with four discharge gates and four discharge gate gauges; a 1½-inch discharge outlet in the hose compartment with valve and gauge on the operator's panel; six compartments built out over the running boards; a 350-gallon booster tank; a 50-gallon foam tank with foam proportioner for 2½-inch lines; high-pressure booster fog gun; and fog, fog-foam, and foam nozzles.

*(Please Turn to Page 22 for More Literature)*

One-Man

# D TOURNAPULL
## Speeds landfill garbage disposal

### 1 Excavates trenches

One man and one machine to handle all operations on city landfill disposal dump — that's the D Roadster Tournapull story in a nutshell. The self-propelled, rubber-tired Roadster uses both a 7-yd. Scraper and a Bulldozer for fast excavating, hauling, spreading, and leveling. This handy 122 h.p. combination digs disposal ditches of any length and size . . . or utilizes gullies to reclaim eroded areas.

### 2 Spreads, compacts, covers garbage

As garbage is trucked in, the versatile Roadster dozes it into place. Normal travel of the rubber-tired rig, back and forth in the trench, solidly compacts the refuse into minimum space. For sanitary sealing, D Tournapull covers the garbage by one of two methods: (1) dozes dirt down from the trench walls, or (2) hauls in dirt as it excavates next parallel disposal ditch. Big 18.00 x 25 low-pressure tires, torque-proportioning differential, and positive power steer help the "D" keep ahead of trenching and filling schedules in all kinds of weather — frequently with time to spare.

### 3 Handles widely-scattered odd-jobs

The fast-moving, rubber-tired Roadster makes profitable use of any short waiting intervals . . . runs anywhere around town at speeds up to 25 m.p.h. . . . handles all sorts of scattered assignments at a moment's notice. "Pinch-hits" for hauling garbage . . . maintains alleys . . . hauls, spreads cinders, gravel surfacing . . . grades parking lots . . . removes snow. Just "say where", and operator hops on and goes. No waiting for trailer, no loading delays, no blocking! Roadster works on a production basis either as a one-man, self-loading tool or in fleet operation with a pusher.

Mail today to:
R. G. LeTOURNEAU, Inc., Peoria, Ill.
for complete information on D TOURNAPULL
to be used for
Name
Title
Department
City, State

Consider what this versatility can mean on your city landfill and maintenance programs. Get all the facts . . . write, or ask your LeTourneau Distributor about high-speed, electric-control D Tournapulls TODAY!

LET

Tournapull Trademark Reg. U. S. Pat. Off. MU-2

LETOURNEAU TOURNAPULLS
MORE WORK PER HOUR WITH RUBBER-TIRED POWER


# Get These Free

*Use the Coupon on Page 21*

### Street Sweeper Holds 3 Cu. Yds.

129 The new Wayne Model 450 street sweeper hauls over three cubic yards of refuse—fewer unloading trips. The sweeper has a non-clogging dirt elevator that pivots automatically to ride over street obstructions, and it is designed so that the pick-up broom lifts dirt only four inches to the point where it is picked up by the center-loading conveyor. Write the Wayne Mfg. Co., 1201 E. Lexington St., Pomona, Calif.

### Pest Control with Fog

130 The Chemical Insecticide Co., 57 13th St., Brooklyn 15, N. Y., will send you literature showing how insects, weeds, odors, germs, and fungus can be eliminated with Aerosol fog.

### Stop Rust

131 Dixon flake silica-graphite paint provides a coating that protects metal from contact with air and moisture. The result: no rusting. Write for literature to the Paint Sales Div., Joseph Dixon Crucible Co., Jersey City 3, N. J.

### Check Water Waste and Leakage

132 Simplex Pitot equipment—the pitot rod, manometer, and recorder—measures flow through pipelines in inaccessible places or where permanent measuring equipment is not installed. With the equipment, described in Bulletin No. 50, flow records through branches or trunk mains are easily obtained. Write the Simplex Valve and Meter Co., Dept. 5, 6789 Upland St., Philadelphia 42, Pa.

### Cut Line Marking Costs

133 The Universal Mfg. and Sales Co., 8716 S. Santa Fe Ave., Dept. 50A, South Gate, Calif., will send you literature on its Mark-Rite tandem striper, Econo-Liner, Line-Master, and gravity marker—four models geared for different requirements from very heavy, full-time duty to the occasional job.

### Traffic Signal Equipment For Any Type Street

134 Southern Signals, Inc., 222 Beach St., Box 1303, Shreveport, La., produces Auto-flow signals that can be made to serve any traffic combination. The precision reflectors are made of Alzak-finished spun aluminum and, combined with adjustable lamp focusing, assure clear signal indications at 600 feet or more.

### Park Benches Can Be Comfortable

135 The park benches made by the J. E. Burke Co., Dept. K, Fond du Lac, Wis., are constructed of heavy hardwood slats that have been sanded, oiled, and molded for maximum comfort and weather resistance. The benches come in three sizes—4, 5, and 6 feet. They may be obtained in olive green or unfinished.

### Do Away With Floor Ruts and Bolts

136 Stonhard Resurfacer patches or overlays concrete, brick, asphalt, wood, or composition floors to make a smooth, non-skid surface that withstands the heaviest trucking. Write for a copy of the folder *No Floor Chopping* to the Stonhard Co., 500 Stonhard Bldg., Dept. AC, 1306 Spring Garden St., Philadelphia 23, Pa.

*(See Catalogs Listed on Page 23)*

# Your Catalog Supply Service

*Use the Coupon on page 21*

### Three Reasons For Parking Meters

**137** If your city is not metered, if your present meters are obsolete, or if your municipality's traffic flow needs greater guidance, write for an illustrated catalog that gives details of the Miller and Automaton (it winds itself) parking meters to the Duncan Parking Meter Corp., 835 No. Wood St., Chicago 22, Ill.

### How to Maintain Old Bituminous Pavements

**138** *Comprehensive Facts About Heater Planer Work* is the title of the booklet offered by the Universal Road Planer Corp., 83 South High St., Columbus 15, Ohio. It shows how this machine cuts paving costs and explains under what conditions the method will not only substitute for more involved processes, but do so with equal efficiency.

### Magnetic Sweepers Save Tires

**139** The Homer non-electric magnetic sweepers consist of a series of permanent magnetic segments in an assembly that permits instant cleaning. The machine picks up nails and other pieces of scrap iron which would cause damage to tires. Write for literature to the Homer Mfg. Co., Inc., Lima, Ohio.

### For Water Treatment

**140** A new bulletin on water clarifiers and cold process softeners is now available from the Graver Water Conditioning Co., Div. of the Graver Tank and Mfg. Co., Inc., Dept. 151, 216 West 14th St., New York City, 11. Bulletin WC103 not only describes the equipment, but also goes into a detailed comparison with other methods of water purification.

### Calcium Chloride Use For Street Maintenance

**141** Brief SB-1, *Calcium Chloride for Surface Consolidated Roads*, is a two-page condensed report on proper maintenance procedures for reshaping gravel streets, adding new materials and applying calcium chloride. Write the Calcium Chloride Assn., Ring Bldg., Washington 6, D. C.

### A Trailer for Hauling

**142** The Tri-Tralor requires no wagon jack or hydraulic or power take-off connections and has a capacity of 5,200 pounds. The full circle 360° turning radius of the castered front wheels permits the Tri-Tralor to turn on a dime. Write the Hotchkiss Steel Products Co., Bradford, Ill.

### Garbage Disposal By Sanitary Fill

**143** Open dumps breed pests and disease. With a Drott bullclam shovel an open dump can be converted to a sanitary fill, eliminating a definite health hazard. The equipment and method are described and cost data on collection explained in a catalog available from the Drott Mfg. Corp., 3841 W. Wisconsin Ave., Milwaukee 8, Wis.

### Keep Swimming Pools Clean

**144** The Standard Pool Cleaner Co., Inc., 1320 Greenfield Ave. S.W., Canton 6, Ohio, makes a complete line of cleaning equipment for swimming pools: copper floats, wall brushes, skimmer and handles, hand and tow vacuum cleaners, and portable self-priming pumps.

### Fast Traffic Zone Marking

**145** Uniform cross-distribution of paint assures clean-cut lines of uniform density. Pressure cleaning equipment prevents clogging and breakdowns. Write for information about the complete line of zone-marking machines to the Kelly-Creswell Co., Xenia, Ohio.

### For Dependable Flow Control

**146** The Kennedy Valve Mfg. Co., 1030 East Water St., Elmira, N. Y., will send you its Bulletin 59, which gives a full description of Kennedy iron-body double-disc gate valves for water service available with various types of connections in sizes from 2 to 60 inches. Also described are the accessories available.

### The Importance of Standards In Street Lighting

**147** Standards are not just poles to support a street light. The right standard for each particular type of street will put the light where it is needed rather than provide a lot of useless spill-over. Ask for *Weldforged Lighting Standard* booklet A1A, the Kerrigan Iron Works, Inc., 274 Madison Ave., New York, N. Y.

### Increase Lift Capacity With Truck Cranes

**148** On scattered lifting jobs requiring frequent moves, you can get extra-load capacities, reach and speed with the Model 304 truck crane. This lifts 50,000 pounds, 11.1 tons more than its crawler rating. And the boom reach is 110 feet. The truck crane rolls along at 30 to 40 mph. Write The Koehring Co., Milwaukee 10, Wis.

### For Low First Cost And High Water-Flow Capacity

**149** Steel water pipelines protected inside and out by a coating of Koppers Bitumastic 70-B enamel avoid tuberculation and rust so that it is unnecessary to compensate for possible corrosion losses by specifying oversized diameters or additional wall thickness. Write for data to the Koppers Co., Inc., Tar Products Div., Dept. 522T, Pittsburgh 19, Pa.

### Solve Your Leaf Problem

**150** The American vacuum leaf loader picks up leaves and other debris by suction. Working around parked cars presents no problem to the machine. Write for printed matter to the Leaf Loader Div., American Structural Steel and Tank Co., 21050 W. 8 Mile Rd., Detroit 19, Mich.

### Three-in-One For Road Maintenance

**151** The Littleford No. 101 Utility spray tank has a spray bar for small application jobs, a hand-spray attachment for patch work, and a pouring pot outlet for crack filling. The No. 101 handles asphalt, tar, emulsion, road oils, or cutback. Write for data to Littleford Bros., Inc., 500 E. Pearl St., Cincinnati 2, Ohio.

### Rejuvenation With Cement Gun

**152** The Gunite Concrete and Construction Co., 1301 Woodswether Rd., Kansas City 6, Mo., specializes in cement gun work in the construction and repair of reservoir linings, concrete and masonry repairs, steel encasement, fireproofing, sewer lining, and canal, ditch, and drain lining.

### Accurate Meters Are Fair to All

**153** Absolute accuracy of water metering is essential to prevent both overcharging the customer and loss of revenue to the municipality. The Hersey Mfg. Co., South Boston, Mass., will send you information about its complete line of meters for use in water-works departments.

### Don't Break Pavements To Install Pipe

**154** The Hydrauger bores a straight open 200-foot-long hole in diameters from 2 to 24 inches—from a trench just 2½ by 7½ feet. Write for a bulletin which shows the low costs and high speeds of the machine to the Hydrauger Corp., Ltd., 681 Market St., San Francisco 5, Calif.

### Two Cars Regulated By One Meter

**155** Each Alfco Twin automatic parking meter services two cars. Not only does this halve the number of meters to be purchased, maintained, and collected from, but permits bumper-to-bumper parking, which simplifies parking in busy areas. Write International Meters, Inc., 100 East LaFrance St., Elmira, N. Y.

### New Model Compressor Does More Work

**156** Jaeger's Model 75 sells at the same price as the old, smaller Model 60, weighs no more, and uses no more fuel unless more air is called for. But it will run two clay diggers instead of one, or three backfill tampers instead of two. Write for a catalog to the Jaeger Machine Co., Columbus 16, Ohio.

### Steel Housing Protects Meter

**157** A housing of steel mounted on an extra-thick steel standard protects the Karpark Superior parking meter from shocks, moisture, cold, or heat. Write for all the facts to the Karpark Corp., Cincinnati 6, Ohio.

### Preserve Hose Length By Efficient Drying

**158** The Circul-Air fire hose dryer not only shortens drying time but air conditions as it dries, preventing mildew and rot. Write the Circul-Air Corp., 575 E. Milwaukee St., Detroit 2, Mich.

### Emergency Portable Power

**159** The Briggs & Stratton Corp., Milwaukee 1, Wis., will send you information on its line of 4-cycle, single-cylinder, air-cooled gasoline engines which are particularly adapted for providing power to municipal construction and repair projects.

### Better Chlorine Usage

**160** The advantages of residual recording in water and sewage plants are improved chlorine usage, better chlorination control, and check data at strategic points in the purification process. Write for details to the Wallace & Tiernan Co., Inc., Newark 1, N. J.

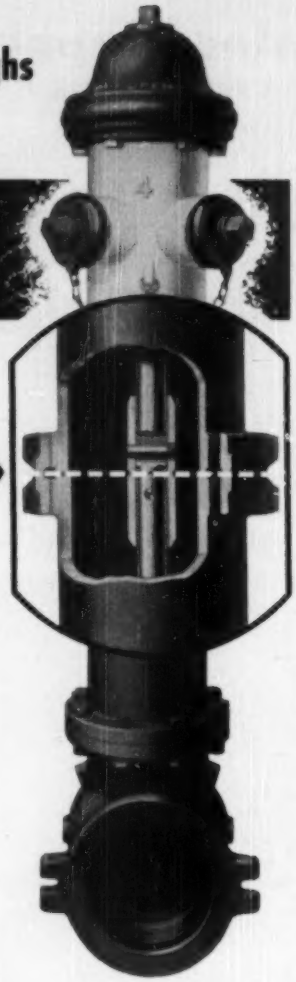
### Small or Large Valves

**161** The Ludlow Valve Mfg. Co., Inc., Troy, N. Y., includes in its line of valves sizes from 2 to 72 inches. For information about the various sizes and styles, write the company.

**(See Page 24 for More Bulletins)**

# The Hydrant that Laughs at Traffic Hazards

KENNEDY
**SAFETOP**



As tough as they come . . .

but when it breaks, it's as clean as a whistle . . . at ground level.

yet, it's back in service in twenty minutes.

The safety breakable section of a KENNEDY Safetop Fire Hydrant will take all the punishment that a standard one-piece hydrant will. But when a couple of tons of flying steel hits it at high speed—and it's more than any hydrant can take—it breaks cleanly and evenly at ground level.

Within twenty minutes of arrival at the scene one man can have it back in service—no excavation—no water—no hoists—no costly replacements. A new breaking ring and a new stem coupling are all that are usually required.

*Write for Bulletin No. 104*

**Where there is no traffic hazard install a KENNEDY Standard Hydrant with one-piece standpipe and stem**

- **The same minimum friction, maximum water supply design.**
- **The same positive drainage to protect against freezing.**
- **The same leak-proof construction and ease of inspection . . . and all parts interchangeable with the SAFETOP except the standpipe and stem.**

*Write for Bulletin No. 38*

THE **KENNEDY** VALVE MFG. CO.
1030 EAST WATER ST.
ELMIRA, NEW YORK
VALVES • PIPE FITTINGS • FIRE HYDRANTS

OFFICE-WAREHOUSES IN NEW YORK, CHICAGO, SAN FRANCISCO • SALES REPRESENTATIVES IN PRINCIPAL CITIES


# Free Literature

***Use the Coupon on Page 21***

### Can Carrier for Street Cleaning

**162** The Caps ("Clean-up After Power Sweepers") Taros can carrier is a single-piece welded frame that holds one or two cans and may be obtained with a level-lifting dirt scoop. Write the Tarrant Mfg. Co., East Ave., Saratoga Springs, N. Y.

### Elevated Tanks As Reserve Supply

**163** The reserve in a Horton tank provides an extra margin which can be used to meet peak water loads and smooth out pressure fluctuations. This reserve is always available for added fire protection, often lowering insurance rates. Write the Chicago Bridge and Iron Co., 2127 McCormick Bldg., Chicago 4, Ill.

### Contemplating Parking Meters?

**164** M. H. Rhodes, Inc., 30 Bartholomew Ave., Hartford 6, Conn., will make a metered parking survey in your municipality in cooperation with your traffic officials, and submit complete recommendations without any obligation. Write also for data about the Mark-Time Hurricane meter.

### Keeping Swimming Pools Clean

**165** In a 400,000-gallon swimming pool, the Roberts' horizontal-pressure filter recirculates and cleans the water in a few hours with minimum waste. Write for information about the company's gravity and pressure filters, water treatment equipment, and recirculation apparatus to the Roberts Filter Mfg. Co., 660 Columbia Ave., Darby, Pa.

### How to Keep Maps Filed

**166** The Tubrak map file holds 80 maps or tracings in 2-inch tubes 36 inches long. The cabinet may also be obtained to hold larger-diameter tubes. The rows are lettered and numbered for quick location. Write for literature to the Scott-Rice Co., 610 S. Main, Tulsa, Okla.

### Diesel Motor Grader For Hard Jobs

**167** The Cat diesel motor grader made by the Caterpillar Tractor Co., Peoria, Ill., gets a safe diesel start from the electrically started gasoline engine. It warms the coolant and allows the diesel to circulate lube oil before actual starting. Mechanically operated controls and high visibility insure precise operation.

### Water Pipe Protected Against Corrosion

**168** Bethlehem Tar-Enameled water pipe is formed from heavy plate steel, and coated with a layer of protective tar enamel to combat incrustation and corrosion. The pipe comes in sizes from 22 inches up to the largest permitted by shipping clearances, and in lengths to 40 feet. Write the Bethlehem Steel Co., Bethlehem, Pa.

### Control Chemical Feeding For Water, Sewage

**169** The Duplex Chem-O-Feeder feeds two different solutions with feeding rates instantly adjustable while the pump is operating. The Model 2-47 has a capacity of 8 gph for each feeding unit, 0 to 100 psi. Simplex and triplex models are also available. Write for bulletins and recommendations to "Proportioneers, Inc.", 463 Harris Ave., Providence 1, R. I.

*(See Page 25 for More Listings)*

# Stop--Check and Mail

*Use the Coupon on Page 21*

### Portable Bleachers

**170** Leavitt Knockdown bleachers combine strength, safety, ease of assembly, durability, and compact storage. One style is particularly advantageous for schools since the bleacher, although permanently attached, rolls back flat against the wall in a 34-inch-wide nested position. Ask for a catalog from the Leavitt Corp., Urbana, Ill.

### Equipment for Water Works

**171** The Worthington Pump and Machinery Corp., Harrison, N. J., will send you information on its complete line of equipment for water works and water supply. Among the products of the company are drilling equipment, compressors, pumps, pressure water filters, meters, turbines, condensers, and air-conditioning units.

### For Maintenance And Construction

**172** Bulletin 881 from the Baker Mfg. Co., Springfield, Ill., describes the Baker engine-mounted bulldozers and Gradebuilders for the Allis-Chalmers HD-5 tractor. Direct lift with high down-pressure provides strength for tough digging.

### Safety Manhole Cover

**173** The Diamond Castings Co., Johnsonburg, Pa., makes a manhole cover that fits tightly at all times; it cannot damage or be damaged by traffic; it can only be removed by hand yet requires no mechanical gadgets to hold it in place; and it is silent at all times. There is a chisel-like point of contact between the cover and the frame.

### Adds to Fire-Pump Life

**174** The Filter-Flo is a suction strainer that eliminates clogged hose nozzles and keeps sand, gravel, weeds, and marine growth out of hose lines. Write the Sheren Fire Equipment Co., Mason, Mich.

### Rubber Roads

**175** The use of natural rubber in the top surfacing of asphalt roads results in the increase of the melting point and the decrease in the penetration and flow. The Natural Rubber Bureau, 1631 K St., N.W., Washington 6, D. C., will send you a booklet describing the process in detail. Ask for *Stretching Highway Dollars with Rubber Roads.*

### Playground Equipment

**176** Described in literature available from the Just-Rite Equipment Co., 1550 Chaffin Rd., Akron 19, Ohio, are such devices as slides, swings, see-saws, bar equipment, a combination merry-go-round and teeter, and gym sets consisting of swings with trapeze, turning rings, and exercise bar.

### Motor Scooter for Economy

**177** The Globester pick-up is a motor scooter with space enough to carry 150 pounds—ideal for maintenance and collection men. And it operates at less than a cent a mile. Write for literature to the Globe Corp., Motor Scooter Div., Joliet, Ill.

### Meter Boxes

**178** The Art Concrete Works, Pasadena, Calif., will send you its 32-page meter box catalog, which gives full details of its line of meter boxes, meter-box covers, valve and gate-valve boxes, and utilities accessories.

### Signs—Plain or Reflectorized

**179** Plain or reflectorized signs made by Lyle Signs, Inc., 2720 University Ave. S. E., Minneapolis 14, Minn., conform to various state highway department requirements and the U. S. Manual of Public Roads—every Lyle sign is officially correct.

### Record Documents; Save Space

**180** Recordak microfilming will de-bulk your files 98% while offering reproductions that cannot be altered without detection. The cost is a fraction of a cent per document and the time is a second or less. Write the Recordak Corp., subsidiary of the Eastman Kodak Co., 350 Madison Ave., New York 17, N. Y.

### Large or Small Pipe

**181** The Lock Joint Pipe Co., P. O. Box 269, East Orange, N. J., can supply you with anything from 16-inch prestressed concrete cylinder pipe to 120-inch reinforced concrete pressure pipe. Regardless of what your municipality's daily water consumption is, you will find the Lock Joint literature of interest.

### Chlorine for Emergencies

**182** HTH, which provides a minimum of 70% available chlorine, is not only handy for the everyday jobs of regular chlorination for the sterilization of reservoirs, water mains, water tanks, and filters, but is essential in times of floods, broken mains, power failures, or chlorinator breakdowns. Write for *Hypo-Chlorination of Water* to the Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.

### Non-Clogging Sump Pumps

**183** The Gorman-Rupp self-priming trash type sump pumps may be used in hospitals, schools, in bringing new residential districts into established city sewerage systems, and in any building faced with a sewage problem requiring a lift to the city sewerage system. Write for Form No. 9-ST-11 to the Gorman-Rupp Co., 343 N. Bowman St., Mansfield, Ohio.

### Complete Sewage Treatment

**184** The Bio-Chemical process, a Guggenheim development, is an economically complete treatment that utilizes community trade wastes to treat the sewage. Write the Bio-Chemical Process, 2266 N. Meridian, Indianapolis 8, Ind.

### Steel Street Forms For Curb, Gutter, and Sidewalk

**185** Bulletin 2259 contains 28 pages of detailed illustrations showing form set-ups for every type of work using the steel curb and gutter form. No need for expensive lumber and carpentry labor, no hand finishing, and the forms are adaptable for every type of job. Write the Blaw-Knox Co., 2009 Farmers Bank Bldg., Pittsburgh 22, Pa.

### Strength Factors In Gas and Water Mains

**186** Standard 6-inch cast-iron gas and water mains withstand a crushing weight of more than 14,000 pounds per foot; withstand more than 2,500 pounds per square inch internal hydrostatic pressure; and can, on a 10-foot span, sustain a load of 15,000 pounds. For information, write the Cast Iron Pipe Research Assn., Thomas F. Wolfe, Engineer, 122 So. Michigan Ave., Chicago 3, Ill.

### Handling Truck Shipments In a Terminal

**187** Fast and accurate handling of truck shipments coming in to a city terminal for city delivery to local consigners is what makes a terminal successful in reducing street traffic congestion. Close search by the Port of New York Authority developed the Teleregister method now used in the Newark as well as the New York truck terminals. Any city owning or planning a truck terminal should get the facts from The Teleregister Corp., 157 Chambers St., New York 7.

### Reduce the Cost of Water

**188** With the use of the pipe made by the American Pipe and Construction Co., P. O. Box 3428, Terminal Annex, Los Angeles 54, Calif., the cost of delivered water is reduced because the pipe has a low first cost, is easy to install, and requires no maintenance. Write for additional data.

### From Rock to Aggregate

**189** The Athey Force-Feed loader plus a portable breaker take care of the entire process of delivering aggregate from the raw product. The breaker reduces to a ¾-inch minus aggregate at the rate of 50 tons an hour. Write for details to the Athey Products Corp., 5631 West 65th St., Chicago, Ill.

### Long-Lasting Fire Hose

**190** One city is still using for standby purposes Bi-Lateral fire hose that dates back twenty-five years. For information about this hose with a record of dependability and longevity, write the Bi-Lateral Fire Hose Co., 20 N. Wacker Drive, Chicago 6, Ill.

### Equipment For Shade-Tree Spraying

**191** The Bean Rotomist applies concentrates and wet or dry dusts in micron-sized spray particles, giving complete coverage with a minimum of drift. The line includes models with outputs to 60 gallons per minute at pressures to 800 pounds. Write for a catalog to the John Bean Div. of the Food Machinery and Chemical Corp., Lansing 4, Mich.

### High-Pressure Fire Fighting

**192** On the Barton-American duplex-multistage centrifugal fire pump, the two independent pumps are driven by individual gear trains so that if one breaks down, the other still operates. The pumps are available for pressures as high as 850 pounds. Ask for Bulletin 8753, American-Marsh Pumps, Battle Creek, Mich.

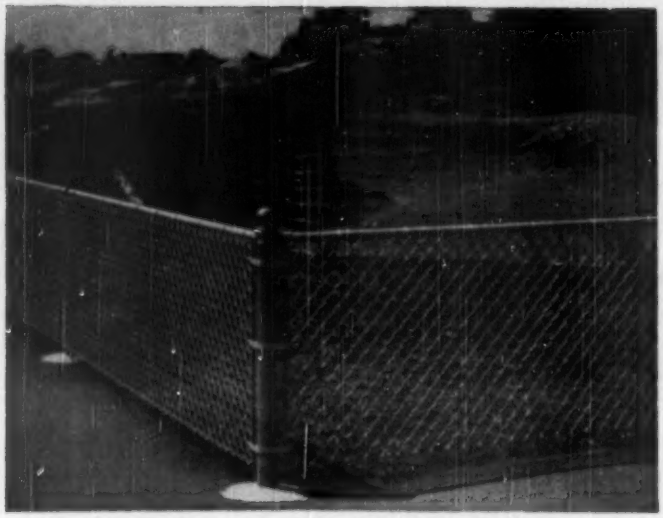
### Save Filing Space

**193** With the Film-a-record microfilm equipment, bulky original records are reduced to micro-size to save filing space, speed up reference, and prevent loss or misfiling. Write for *Tax Accounting Procedures Manual No. MC 738* to Remington Rand, Management Controls Reference Library, Room 1340A, 315 Fourth Ave., New York 10, N. Y.

### Fence Never Needs Painting

**194** Copperweld non-rusting fence requires no maintenance and no painting. The thick molten-welded copper covering provides permanent protection against rust, and the strong steel core to the chain link fence prevents sagging and breakage. Write for a catalog to the Copperweld Steel Co., Glassport, Pa.

*(Please Turn to Page 26 for Other Listings)*



*Cyclone is the trade-mark name of fence made only by Cyclone Fence Division. Accept no substitute.*

## Chicago's new zoo at Brookfield, Ill.

## . . . Protected by Cyclone Fence

ZOO visitors come to *see*, so it's up to authorities to display their specimens in the most open, natural settings possible, consistent with public safety.

Many of America's finest zoos have found Cyclone Chain Link Fence ideal for such purposes. Without obstructing the view or detracting from the beauty of the setting, Cyclone Fence provides protection for visitors and animals as well. And Cyclone is made to last.

Several types of Cyclone Fence—Safeguard, Invincible, Non-Climbable, Victory and Steel Picket—as well as a complete range of heights, make it possible for you to fit the fence to protection requirements of each section of the property.

Cyclone Fence has many other municipal uses — to enclose playgrounds, schoolyards, athletic fields, airports, reservoirs and other property. You'll find it good planning to include Cyclone in the original specifications of new projects, as well as for the improvement of present property.

We'll be glad to send you our 32-page booklet on fence, giving you complete information on the entire Cyclone line. And for estimates without obligation to you, contact our nearest sales office; they're in most principal cities.

CYCLONE FENCE DIVISION
(American Steel & Wire Company)
WAUKEGAN, ILLINOIS - BRANCHES IN PRINCIPAL CITIES
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

NO JOB IS TOO LARGE—NO JOB IS TOO SMALL FOR CYCLONE

## U·S·S CYCLONE FENCE

CLIP THIS COUPON SEND IT TO—

Cyclone Fence, Waukegan, Ill., Dept. B-60

Please mail me, without obligation, a copy of "Your Fence."

Name.....

Address.....

City..... State.....

USS

UNITED STATES STEEL


# Free Literature

***Use the Coupon on Page 21***

### For Street Maintenance

**195** The S-J distributor may be used for patching, application of prime coat, sealing, shoulder repair, and crack filling. The machine sucks back surplus material into the tank after the spraybar is closed, minimizing drip and providing a clean bar for the next job. Write for Catalog S-J to the Standard Steel Works, North Kansas City, Mo.

### Modern Pool Layouts

**196** Ideas and suggestions on modern pool layouts together with complete details on the correct drainage fittings to be used in the construction of new pools or remodeling of old pools have been published in the new 32-page Manual SP-3, available from the Josam Mfg. Co., 1302 Ontario, Cleveland, Ohio.

### Memorial Bronze Plaques

**197** The Michaels Art Bronze Co., Inc., Covington, Ky., will send you an illustrated folder showing its line of memorials, building plaques, honor rolls, and name plates. Bronze is virtually indestructible, and is comparatively unaffected by time or weather.

### Padlock Protection

**198** The Ace 7 pin-tumbler mechanism permits more than 80,000 key changes, minimizing the chances of anyone else having a key to fit your locks. Changes for your exclusive use are registered in your name for extra security. Write for literature to the Chicago Lock Co., 2024 North Racine Ave., Chicago 14, Ill.

### Paper Balers

**199** The Economy Baler Co., Ann Arbor, Mich., will send you literature illustrating its line of paper balers. With these machines, waste paper is economically compressed and baled without danger of fire.

### Strap Street Signs Securely To Any Type of Post

**200** Steelbinder equipment makes it possible to quickly strap traffic and street-name signs on any shape or size pole. The unit consists of a steel-binder tool, hammer cutter, dispensing reel, coil of ¾-inch strapping, and ¾-inch steelbinder seals. Write for literature to A. J. Gerrard & Co., 1950 Hawthorne Ave., Melrose Park, Ill.

### Vertical Turbine Pumps

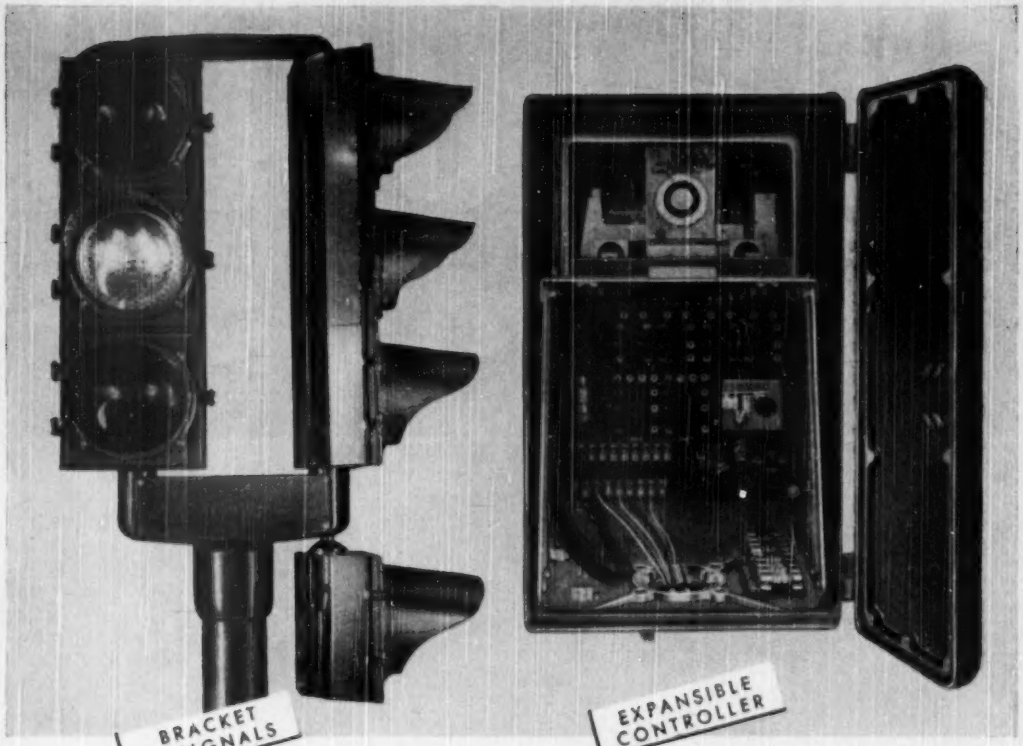
**201** The pumps from Layne & Bowler, Inc., Memphis 8, Tenn., are built in sizes from 40 to 16,000 gpm. They may be installed in existing wells for fire protection, booster service, cooling tower, or river pick up. Write for catalog.

### High-Output Generator

**202** The Leece-Neville ac-dc generating system with 50-ampere output is small and light and provides 25 to 35 amperes with the engine idling. The system may be used on light trucks or even on cars where the original-equipment generators no longer meet current requirements. For literature write the Leece-Neville Co., Dept. N., Cleveland 14, Ohio.

### Check Your Water Distribution System

**203** A Pitometer survey is an audit of the entire water distribution system—present efficiency, ability to handle future demands. The result of such a survey is a conservation of available supplies, a decrease in operating costs, and an increase in revenue. Write the Pitometer Co., 50 Church St., New York 7, N. Y.




# a complete new line!
# TRAFFIC CONTROL EQUIPMENT

To meet modern needs, General Electric has developed this new line of traffic-control equipment. It's new in basic principle—simplified in design—flexible for future needs—unitized for easier maintenance.

NEW, EXPANSIBLE CONTROLLER is made up of unit assemblies—instantly removable—instantly replaceable with interchangeable units. It has space for one, two, or three jack-mounted individually-motored dials for the ultimate in flexibility. Here's a controller you can use for today's traffic—expand for tomorrow's. And maintenance-wise it's tops—with its dust and watertight cover, tamper-proof timing settings, rigid dial-contact arms, automatic gear-mesh and oil-less bearings. Write for Bulletin GEA-5481.

NEW BRACKET and SIGNALS—Cast brackets contain a terminal board in the bottom bracket for easier wiring and quicker testing—lowering both installation and maintenance costs. With an amazingly effective optical system, these signals show brilliant, positive indications even with adverse sun conditions. A unique combination of four gaskets forms two separate seals to keep out dust and moisture. Write for GEA-5481. Apparatus Dept., General Electric Co., Schenectady 5, N. Y.

GENERAL ELECTRIC

451-50

# PAY LOADS THAT PAY OFF

WHETHER you're loading useful material or rubbish, it still pays off through extra savings if it's done with added speed and efficiency. You can see for yourself how true that is by watching a matched-unit "Caterpillar" Diesel Tractor with Trackson Hydraulic Traxcavator attachment in action. The one in the picture (owned by the Village of Richfield, Minn.) is shown loading windrowed salvage material in preparation for blacktopping. Get the trucks up fast and steadily, and this work-hungry outfit loads 'em at the rate of 90 yards an hour. That's "pay loading" that really pays off!

Yet, that's only a sample of its many-sided uses. Removing stumps, transplanting trees, snow removal, garbage disposal, backfilling on water and sewerage work are others.

Major key to the unit's money-saving ability is the tractor. It's "Caterpillar"-built—and that means power, ruggedness, dependability for rough work day after day, long life, minimum down time for repairs or parts replacements. And when, eventually, the latter are needed, a dealer organization second to none of its kind in completeness and efficiency can give you quick service.

Before you buy a tractor—of any size, for any purpose, or with any attachments—be sure to see your "Caterpillar" dealer. Get his story—*and a demonstration.*

**CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS**

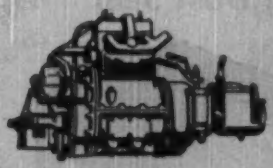
# LOOK UNDER THE HIDE *for the qualities that pay off in tractor performance and long life . . . you'll find them in every "Caterpillar" detail. For example:*

**Hard Chrome-Faced Compression Rings** are standard on all models of "Caterpillar" Diesel Tractor Engines —increasing life and performance at critical point of engine design.

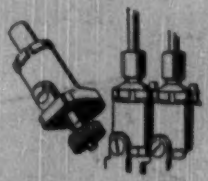
**Alloy Iron Wet Type Cylinder Liners** are "Hi-Electro" hardened — giving exceptionally long life. Wearing surface is chemically treated for proper break-in.

**Solid Aluminum Alloy Connecting Rod and Main Bearings** are exclusively "Caterpillar." Advantages: low rate of wear; fine heat-transfer characteristics; high corrosion resistance.

**Air-Cooled "Lube" Oil.** Air cooling lowers oil temperatures — reducing carbon, minimizing gum formations, and adding to the efficient serviceable life of working parts.



**Independent Starting Engine** of exclusive "Caterpillar" design gives safe-and-sure starts at all times, and allows the Diesel to build up full oil pressure before starting.



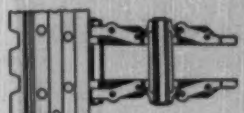
**"Caterpillar"-Built Fuel Injection System** is perfectly matched for "Cat" Engines. Pumps and valves require no adjustments, and are replaceable in the field—like spark plugs.

**Tapered Splines**—specially developed by "Caterpillar"—lock sprockets securely to shafts. So effective have they proved that the principle is similarly applied to other vital parts.

**"Hi-Electro" Hardened Final Drive Gears.** Teeth are three times harder after treatment and gear life is further boosted by the favorable compressive stress this process supplies.

**Bellows Seals** are self-aligning, self-adjusting and self-lubricating—keep oil in, dirt and water out without need for take-up adjustment or periodic attention.

**Correct Track Alignment,** both vertically and laterally, is assured with this rigid roller frame. Heavy diagonal brace and widely spaced bearings add life to tracks and rollers.



**Counterbored Track Links** — to provide a tighter, better sealed joint and greater bearing surface between bushings and track pins. Extra assurance of long life in abrasive soils!

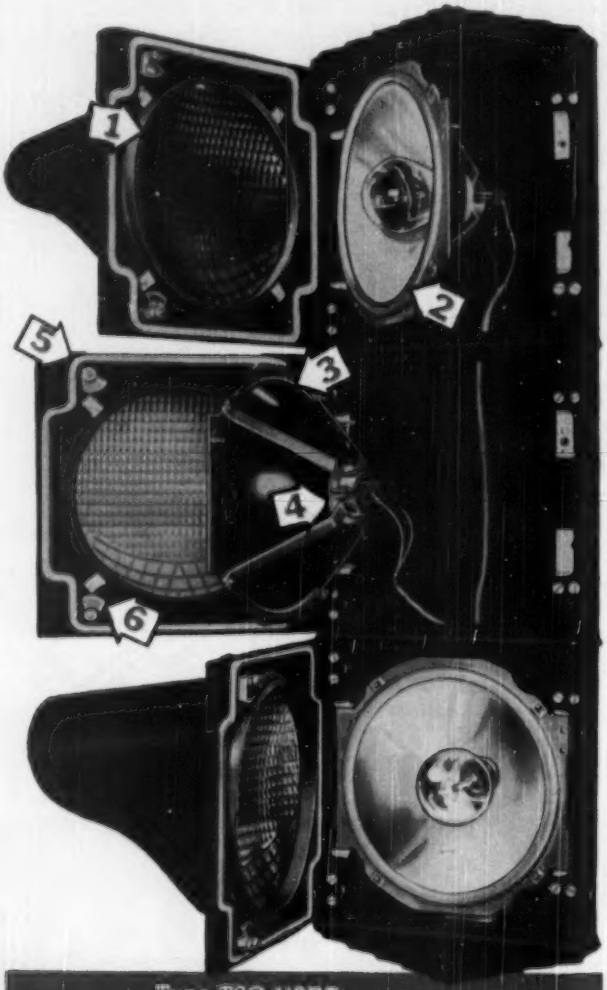
**Hour Meter** to give user the facts on tractor performance and life. Hour meters have always been standard on "Cat" Engines because "Caterpillar" has nothing to hide.

**CATERPILLAR**

**DIESEL** ENGINES · TRACTORS · MOTOR GRADERS
EARTHMOVING EQUIPMENT

# NOW for the first time you can with an optical system

## CROUSE-HINDS
### Dust-Tight Traffic Signal with the Twin-Ring Molded Rubber Dust Seal




Type TSO-113DT

For years, city and state officials have been waiting for a really dust-tight optical system, an optical system that would stay clean through all conditions of atmosphere and climate. Now Crouse-Hinds has produced such an optical system. The lens and reflector assembly has built-in barriers through which dust CANNOT PASS.

This new dust-tight optical system will retain its peak efficiency for the life of the signal, will provide greater light output and increased visibility.

This new Crouse-Hinds construction makes the traffic signal system more effective. And at a greatly reduced maintenance cost.

TWIN-RING DUST SEAL . . . Synthetic rubber of the proper durometer, molded in one piece . . . is not extruded and spliced together. It not only makes the optical system dust-tight; it also serves as a gasket for the lens. This gasket will withstand temperatures 100 degrees higher than any encountered in the optical system . . . it will not become hard or brittle, nor will it become tacky and stick to any of the parts.

REFLECTOR RING . . . Half-hard aluminum 1/16-inch thick, formed to provide a flat, rigid surface against which the twin-ring dust seal is compressed. It is so shaped that the reflector gasket is held firmly in place.

REFLECTOR GASKET . . . Cork, punched from a solid sheet . . . not spliced at any place. It fits tightly in the back of the reflector ring and will not fall out. This gasket provides a perfect seal against the ground edge of the reflector.

RECEPTACLE GASKET . . . Cork, punched from a solid sheet . . . not spliced at any place. It fits tightly around the smooth surface of the molded composition lamp receptacle, and is held firmly against the apex of the reflector by a metal washer.

RESILIENT DOOR GASKET . . . Cemented into the gasket groove of the door, and is closed against a raised bead on the signal housing. This gasket will not become hard or brittle, and retains its resiliency indefinitely.

TWO DOOR CATCHES . . . Two cam-acting lever catches which, when turned approximately 90 degrees, fasten the door securely, thus excluding all dirt, dust, and moisture. The cam-acting catches bear against the inner surface of the signal housing and lock the door tightly against the gasket.

The Dust-Tight Traffic Signal is built to Crouse-Hinds high standard of quality . . . from the finest materials, with painstaking care, by skilled craftsmen. Write for additional information on this outstanding develpment in the traffic engineering field.

**CROUSE-HINDS COMPANY**
**Syracuse 1, N. Y.**

Offices: Birmingham — Boston — Buffalo — Chicago — Cincinnati — Cleveland — Dallas — Denver — Detroit — Houston — Indianapolis — Kansas City — Los Angeles — Milwaukee — Minneapolis — New York — Philadelphia — Pittsburgh — Portland, Ore. — San Francisco — Seattle — St. Louis — Washington. Resident Representatives: Albany — Atlanta — Baltimore — Charlotte — New Orleans — Richmond, Va. — Salt Lake City
CROUSE-HINDS COMPANY OF CANADA, LTD., TORONTO, ONT.

# have a traffic signal that is really dust-tight and ....

## remains CLEAN inside

The NEW "DT" Series (dust-tight)

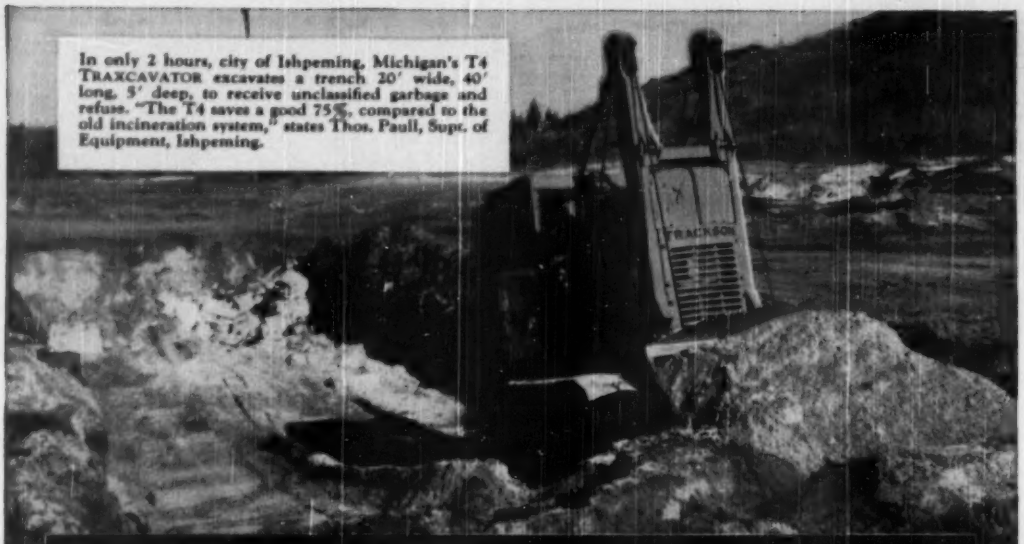
**Guardians of the Gleaming Reflector**

1. **TWIN-RING DUST SEAL** .... makes double contact with the reflector ring .... gives double protection .... also serves as lens gasket.
2. **ALUMINUM REFLECTOR RING** .... rigid, flat surface insures postive contact with the rubber twin-ring .... makes a dust-tight seal.
3. **CORK REFLECTOR GASKET** .... gives a dust-tight joint at the reflector edge.
4. **CORK RECEPTACLE GASKET** .... completely seals the receptacle opening.
5. **RESILIENT DOOR GASKET** .... makes the housing weather-proof.
6. **DOOR CATCHES** .... two on every door insure uniform pressure against the door gasket and the twin-ring seal.

*Sustaining Member of I.M.S.A.*

A Nationwide Distribution Through Electrical Wholesalers

Type TSO-111DT



In only 2 hours, city of Ishpeming, Michigan's T4 TRAXCAVATOR excavates a trench 20' wide, 40' long, 5' deep, to receive unclassified garbage and refuse. "The T4 saves a good 75%, compared to the old incineration system," states Thos. Paull, Supt. of Equipment, Ishpeming.

# TRAXCAVATOR *Land-Fill* DISPOSAL

## CUTS COST AND HEALTH-HAZARDS

*— for Burlington, Vt. and Ishpeming, Mich.*

*Burlington, Vermont, and Ishpeming, Michigan, typify progressive cities from Coast to Coast — that have the age-old garbage and rubbish disposal problems solved, with the* TRAXCAVATOR *sanitary fill method.*

No more rats — bacteria breeding places blitzed — incinerating stench and eyesore dumps eliminated — mosquito "hatcheries" out of business. And property values are increased, while tax dollars are saved — as many as 75% — compared to pre-TRAXCAVATOR disposal!

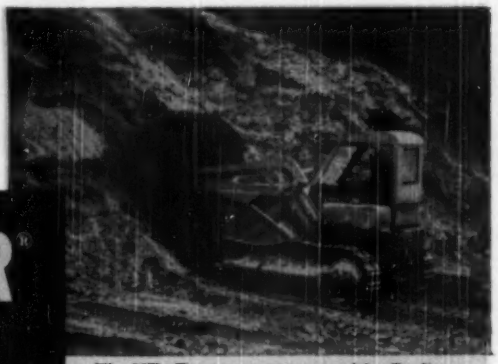
The TRAXCAVATOR digs trenches; spreads and compacts garbage and trash; covers the rubbish with clean earth; seals it ready to receive the next layer of unclassified city refuse, tomorrow.

Unfailing traction makes the TRAXCAVATOR an all-weather performer — with so powerful a "crowd" it digs disposal trench in hard clay or frost. The proper size of TRAXCAVATOR, under one-man control, commonly is the entire sanitary landfill crew! And this thrifty unit does dozens of other excavating, loading and grading duties.

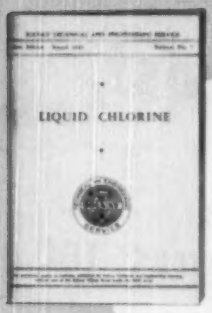
In the TRAXCAVATOR line of 5 world-proved models (½ to 4 cubic yards capacity) there's one to fit your city's needs exactly. See your TRACKSON-"Caterpillar" Dealer for prompt facts, or write TRACKSON COMPANY, Dept. AC-60, Milwaukee 1, Wisconsin.

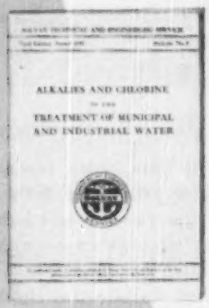
# TRAXCAVATOR®

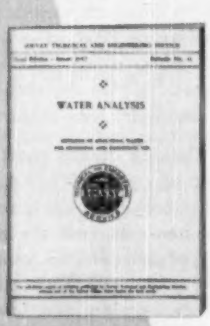
*The Original Tractor Excavator*



The HT4 TRAXCAVATOR owned by Burlington Street Dept., Burlington, Vt., "doubles" in sanitary landfill garbage disposal. Here the hydraulically controlled unit "borrows" earth from a hillside to spread and compact on garbage.




# See How These Technical Bulletins Can Help You

**Years of research and** study have gone into the preparation of these Solvay Technical Bulletins. Now they are yours without cost or obligation . . . to answer questions on water treatment, water analysis, and the handling and storage of liquid chlorine. For your free copies of the Solvay Technical Bulletins, fill in and mail the coupon below.

These valuable Technical Bulletins are a part of Solvay service . . . another one of the "extras" available to all users of soda ash and chlorine in the water field.

Still another feature is Solvay's prompt delivery service of the materials you need . . . from a coast-to-coast chain of warehouses and stock points.

An additional service to the users of Solvay chlorine and alkalies is the Solvay Technical Service staff. These trained men are experts on the application of chlorine and alkalies in water conditioning, and they are ready to assist you with any water treating problem . . . without obligation. For further details, contact your Solvay representative.

***For Water Conditioning***

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TRADE-MARK REG. U. S. PAT. OFF.

## LIQUID CHLORINE
## SODA ASH

**SOLVAY SALES DIVISION,** Allied Chemical & Dye Corporation
**40 Rector Street, New York 6, N. Y.**

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Name _____

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**Soda Ash • Caustic Soda • Caustic Potash • Chlorine • Potassium Carbonate • Calcium Chloride • Sodium Bicarbonate • Specialty Cleansers • Sodium Nitrite Nytron • Ammonium Bicarbonate • Para-dichlorobenzene • Ortho-dichlorobenzene • Monochlorobenzene • Methanol • Ammonium Chloride • Formaldehyde**

# "It's not the original cost, it's the upkeep"

## THIS APPLIES TO PARKING METERS, TOO

It could and usually does prove expensive to buy a parking meter on price alone. Some meters are short-lived and costly to maintain right from the start. As a result earnings are not as high as you might expect, and returns diminish as the years go by. It's wise, therefore, to check carefully the maintenance records of the meters you are considering. And when you look into the matter of maintenance, insist upon five- to ten-year records of "on the street" performance—not on laboratory tests alone.

MI-CO Parking Meters meet all requirements. The original cost of MI-COs is right. Furthermore, they have an enviable reputation for low-cost maintenance from the time they are installed. And many MI-CO installations are more than ten years old. Correct design, simple, rugged construction, and fewer moving parts are some of the reasons for MI-COs' remarkable longevity and low-cost upkeep. With low-cost maintenance and long life assured, returns on your meter investment will be greater over a longer period of time.

We'll be glad to submit records together with other information, which will prove the advisability of choosing dependable MI-CO Parking Meters. May we send you all the facts?

**MI-CO METERS, 231 Court St., Covington, Ky.**

Division of The Michaels Art Bronze Co., Inc.

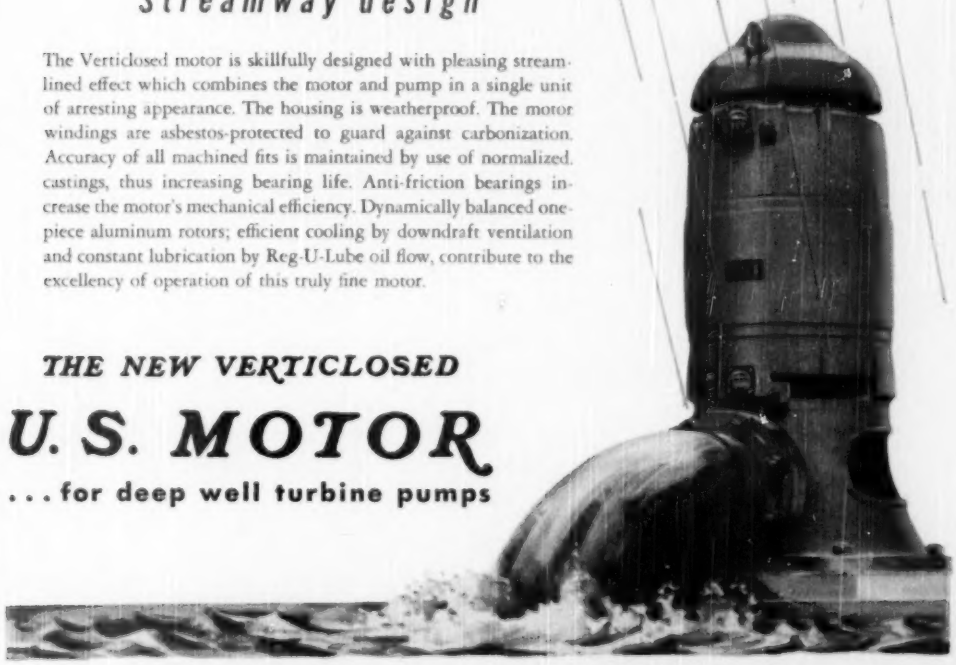
# *Presenting*

## AMERICA'S MOST DYNAMIC PUMP MOTOR

TODAY, U. S. Motors again add to pump progress by introducing the new *U. S. Streamway Verticlosed Motor.* This motor incorporates new and exclusive features which make it, by every comparison, the most outstanding power unit ever developed for water pumping. *The Streamway* principle of structural and functional integration was designed for progressive pump manufacturers who demand an advanced motive unit to economically power their modern pumps.

### *Streamway design*

The Verticlosed motor is skillfully designed with pleasing streamlined effect which combines the motor and pump in a single unit of arresting appearance. The housing is weatherproof. The motor windings are asbestos-protected to guard against carbonization. Accuracy of all machined fits is maintained by use of normalized castings, thus increasing bearing life. Anti-friction bearings increase the motor's mechanical efficiency. Dynamically balanced one-piece aluminum rotors; efficient cooling by downdraft ventilation and constant lubrication by Reg-U-Lube oil flow, contribute to the excellency of operation of this truly fine motor.

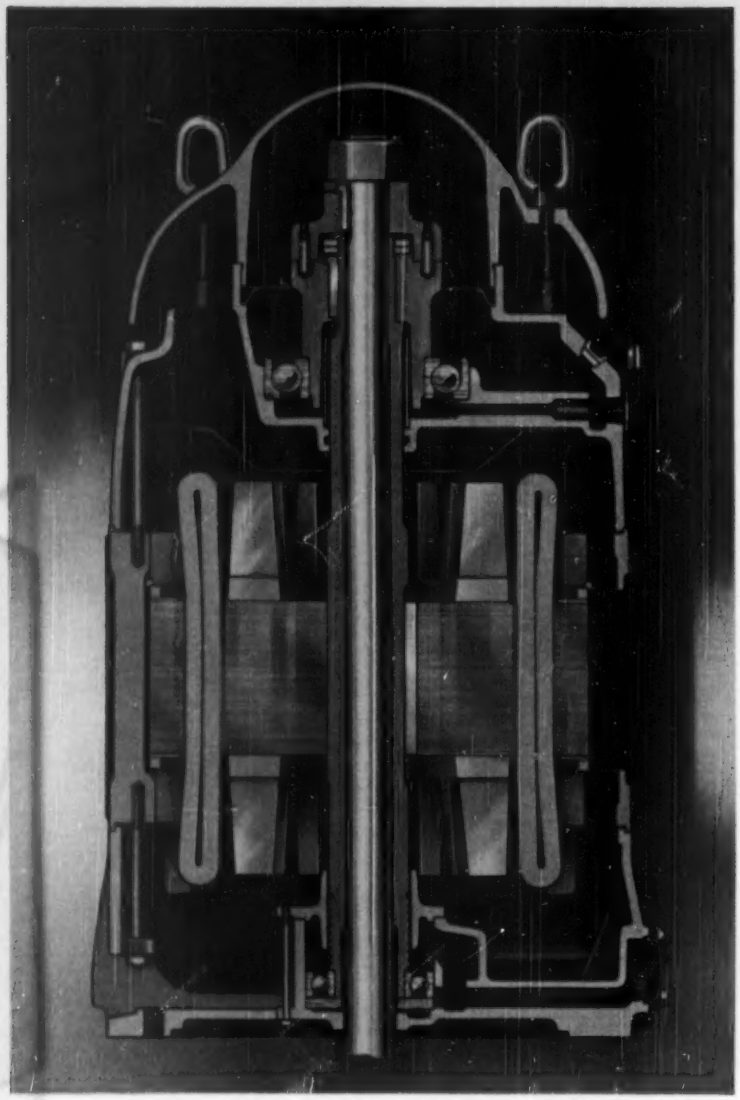


***THE NEW VERTICLOSED***

# *U. S. MOTOR*

**. . . for deep well turbine pumps**

(See next page)



# The NEW *U. S. Verticlosed Motor* gives you these advanced features:

DOWNDRAFT VENTILATION

ASBESTOS PROTECTION

NORMALIZED CASTINGS

REG-U-LUBE OIL FLOW

VISOLUBE OIL GAUGES

LUBRIFLUSH LUBRICATION

ADJUSTABLE HOLLOWSHAFT

INTERCHANGEABLE BASES

WEATHERPROOF HOUSING

STREAMWAY DESIGN

***When you select a deep well turbine pump, be sure to specify a U. S. Verticlosed Motor, made available by the leading pump builders, in all sizes and capacities.***

***Ask for descriptive Bulletin***

*An Investment in Future Economy*

***The* QUALITY LINE *of Power***

***ELECTRIC MOTORS TO FIT THE NEED***

**VARIDRIVE — SYNCROGEAR — VERTICLOSED — UNICLOSED— UNIMOUNT AND TOTALLY-ENCLOSED**

Request Bulletin featuring any of these motors

## U.S. ELECTRICAL MOTORS Inc.

**PACIFIC PLANT: Los Angeles 54, Calif. • ATLANTIC PLANT: Milford, Conn.**

Atlanta 3, Ga.; Bakersfield, Calif.; Boston 16, Mass.; Chicago 8, Ill.; Cincinnati 16, Ohio; Cleveland 14, Ohio; Dallas 9, Texas; Detroit 2, Mich.; Fresno 1, Calif.; Houston 4, Texas; Indianapolis 4, Ind.; Milwaukee 2, Wisc.; Minneapolis 2, Minn.; New York City 6, N. Y.; Philadelphia 2, Pa.; Pittsburgh 2, Pa.; San Francisco 7, Calif.; Seattle 4, Wash. *Distributors and Agents in all principal cities.*

## U.S. MOTORS

—embody

ASBESTOS PROTECTION
NORMALIZED CASTINGS
LUBRIFLUSH LUBRICATION

# New Streets for Old
# WITH ADAMS MOTOR GRADERS

**ONLY ADAMS OFFERS ALL THESE OUTSTANDING ADVANTAGES**

- 8 Overlapping Forward Speeds
- High-Arch Front Axle for Clearance
- Push-Button Starting from Cab
- Positive Mechanical Controls
- Wide Range of Blade Adjustments
- Exceptional Blade Clearance in All Operating Positions
- Balanced Weight Distribution
- Easy Access for Fast Servicing
- World-Wide Dealer Service

In hundreds of cities and towns you'll find Adams Graders hard at work on all types of projects. . . . They are ideal for building, rebuilding and maintaining city streets and alleys—for backfilling over sewers, water mains and gas pipes—for grading playgrounds, parks, parking areas, etc. . . . There are 7 models to choose from—a size to suit your purse and purpose. Ask your local Adams dealer for full particulars on the model best suited to your particular requirements.

**J. D. ADAMS MANUFACTURING CO., INDIANAPOLIS, IND.**

*Make your next motor grader an* **Adams**

ALFCO TWIN PARKING—
ALL 3 WAYS
1. PARALLEL
2. ANGULAR
3. OFF-STREET
THIS CAR
THIS CAR
The ALFCO TWIN
AUTOMATIC
PARKING METER
PARKS 2 CARS AT 1 METER
Yes indeed! you make a substantial savings with Alfco Twin Automatic Parking Meters whether parallel, angular, or off-street parking is employed. In fact, you can use all three ways if you like—and your advantage in substantial savings and more efficient parking continues to mount.
—because with Alfco Twin Meters you have about half as many meters to install—about half as many collections to make—about half the servicing and maintenance. Yet, the Alfco Twins do the full size job of providing a parking space for every car—at about half the cost of single meters.
Write us . . . we have models to suit your needs.
INTERNATIONAL METERS, INC.
EXECUTIVE OFFICES: 161 E. LaFRANCE ST., ELMIRA, N. Y.
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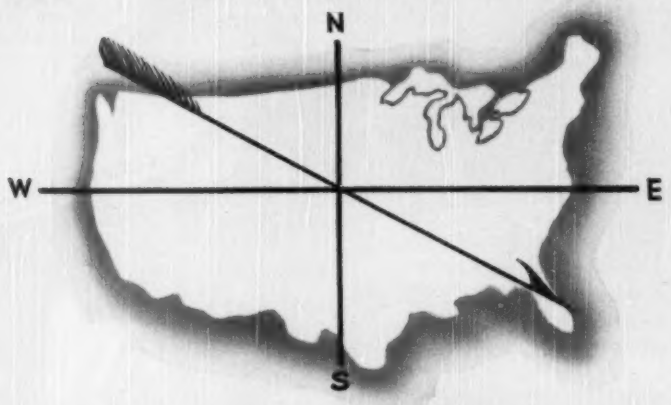
ALFCO

# All Over America...



## More Cities are installing more

# ALFCO TWIN

## AUTOMATIC PARKING METERS

Join the list of progressive cities where one Alfco Twin Automatic Parking Meter parks two cars! . . . Consider these savings! . . . About one half the number of meters to install, clocks to wind, meters to service, collection stops to make! More room for cars. No reduction in spaces! Fewer accidents! Better traffic control! Write us today.

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Denison, Texas
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East Detroit, Michigan
East Palestine, Ohio
El Campo, Texas
Elizabeth, N. J.
Elmira, New York
*Evansville, Indiana
Falfurrias, Texas
*Freeport, L. I. N. Y.
*Fremont, Nebraska
Glen Cove, L. I. N. Y.
Grand Prairie, Texas
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Mount Healthy, Ohio
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*Recirculated

*Models available to suit your needs . . . Parallel, Angular or Off-Street*

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ALFCO

# *NEW and Heavy-Duty Engineered*

## TO SAVE YOU MONEY

## Whether you haul coal or rock, sand or gravel

You get lower-cost performance, more miles of trouble-free hauling, and longer life from every new International Truck because every new International Truck is HEAVY-DUTY ENGINEERED.

**Proof of this statement boils down to this:**

1. Heavy-duty truck buyers keep records of hauling costs right down to the last penny. On the basis of what these records show, these cost-conscious men have bought more heavy-duty International Trucks than any other make for 18 straight years.
2. The extra values that for almost two decades have assured America's most exacting truck buyers of better performance at lower cost per mile are engineered into every new International Truck from the smallest to the largest.

Every new International Truck from 4,200 to 90,000 pounds gross vehicle weight offers heavy-duty engineered stamina and operating economy combined with new comfort and ease of handling.

**You get new comfort and driving ease** in the "roomiest cab on the road." Step into the Comfo-Vision Cab and discover how much more "move-around room" there is in the "roomiest cab on the road." Note how easy it is to adjust the wide seat to just the right position.

Look out through the one-piece, scientifically curved Sweepsight windshield. Place your hands right where they feel natural for driving—and you'll find them gripped around the sturdy steering wheel. And just wait till you start going—you'll enjoy more positive control . . . thanks to new Super-steering.

**You get more all-'round truck value** in every new International Truck. See the new valve-in-head truck engines, new rear axles, new features throughout—all proved under actual operating conditions. Get the facts about new Internationals—the world's most complete line of trucks.

See for yourself . . . see your International Truck Dealer or Branch, soon.

International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

*Tune in James Melton and "Harvest of Stars"—NBC, Sunday afternoons*

*ALL NEW, ALL PROVED*

# INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY CHICAGO

# Wherever You Go

## . . . IT'S MODEL 10 AUTOMATIC SIGNALS

**Wherever you go—wherever a volume of high speed traffic flows over an intersection of rail and highway—there you'll be likely to find Model 10 Automatic Signals faithfully performing their life-saving duty.**

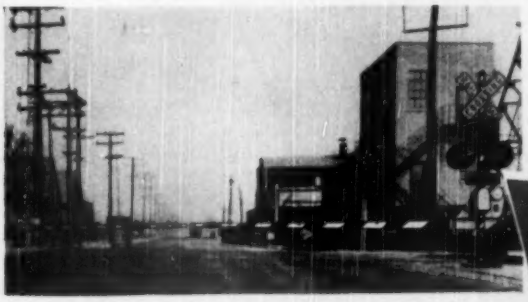
The widespread acceptance of these signals by nearly a hundred railroads, during a period of just fourteen years, can be explained in two words: ***OUTSTANDING PERFORMANCE.***

*Model 10 design has been imitated, but Model 10 performance never duplicated.*

***Write for Brochure 748-AC6***

*Outstanding performance* — 24 hours a day, at thousands of hazardous crossings — has built for Model 10 signals a safety record unapproached by that of any other grade crossing protective device. *Outstanding performance* has earned for Model 10's *alone* the Certificate of Merit awarded by the New York Museum of Science and Industry. *Outstanding performance*—recognized by men determined to see grade crossing accidents eliminated — is the reason you find Model 10's wherever you go.

U. S. Pat. Nos. 2,137,196 2,362,710. 2,372,579. Pat'd in Canada 6-27-39



*Model 10 Signals began their remarkable contribution to grade crossing safety in June, 1936, when the first Model 10's ever used were installed at Harvey, Illinois. During the five years preceding this installation, there were 31 fatalities at railroad-highway crossings in Harvey — 14 of the deaths occurring at this crossing alone. Since Model 10's were installed here, NOT A SINGLE ACCIDENT HAS OCCURRED.*

*Since Model 10's have been installed at thousands of dangerous railroad-highway crossings, NOT ONE FATALITY has ever occurred as a result of operation failure.*

**Model 10**

AUTOMATIC GRADE CROSSING SIGNALS
PRODUCT OF
**WESTERN RAILROAD SUPPLY COMPANY**
CHICAGO 8, ILLINOIS

LEADING MANUFACTURER OF GRADE CROSSING SAFETY DEVICES — MAKER OF RAILWAY SIGNALING ACCESSORIES

# going over big! ... the modern

No doubt about it – there's a new favorite in fire apparatus – the modern Mack Aerial Ladder Truck with one-man control and complete automatic stops. All-hydraulic, smooth and foolproof in operation, fully tested and proved, it provides a new flexibility of aerial ladder performance that is winning the praise of fire officials everywhere. And they are backing up their opinion with orders!

Here are all the features you need for modern aerial ladder operations. Fast, even action of ladders, turntable and jacks. Simplified, positive, centralized controls. The high safety factor of all-welded, box-girder all-steel construction with self-leveling fly-ladder locks. And *completely foolproof design* – can be operated safely by anyone!

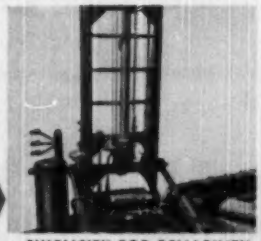
Available in 65 and 75 foot lengths, the all-metal aerial ladder is mounted on the powerful Mack Type 85 chassis. It carries a full complement of easily accessible ground ladders and truck equipment. There is room for booster equipment and hose compartments if desired, with a choice of semi-cab, coupe-cab or standard open-seat design. Powered by the famous Mack Thermodyne "707" fire apparatus engine, the Mack aerial embodies all the engineering skill and craftsmanship that have made Macks the finest for forty years. See your Mack representative for complete details, or write for fully descriptive booklet.

**FLEXIBLE, SMOOTH OPERATION.** Jacks down, ladder up, flies extended – all ladder-raising operations are easy, fast and astonishingly smooth and flexible.

# MACK AERIAL LADDER TRUCK

*one-man control*

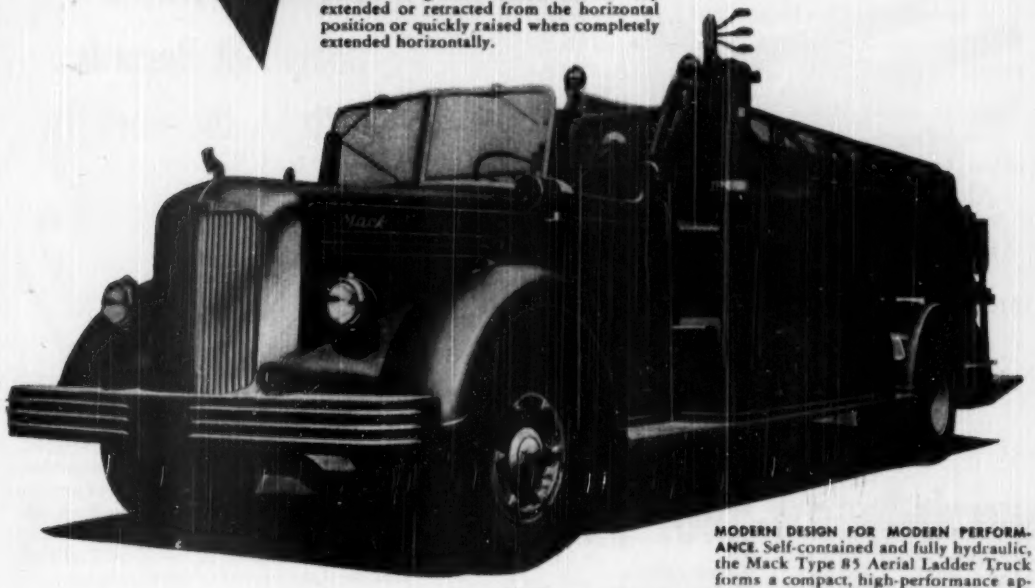
*complete automatic stops*



**SIMPLICITY FOR RELIABILITY.** Extending and retracting of fly ladder is fully hydraulic, eljminating all troublesome mechanism.

**SAFE, POSITIVE CONTROL.** Ladder-raising or fly-extension *stops automatically* when an obstruction is encountered, or when ladder is fully raised, fully extended or retracted. Completely foolproof.

**AMAZINGLY STRONG AND VERSATILE.** Fully extended horizontally, ladder easily lifts a 6-footer off ground. Ladder can be fully extended or retracted from the horizontal position or quickly raised when completely extended horizontally.




**MODERN DESIGN FOR MODERN PERFORMANCE.** Self-contained and fully hydraulic, the Mack Type 85 Aerial Ladder Truck forms a compact, high-performance apparatus, designed throughout for complete one-man control.

*Be Performance-Wise*

**modernize with**

**MACK MANUFACTURING CORPORATION**

Fire Apparatus Division
Long Island City 1, N. Y.

Mack

**outlasts them all**

Factory branches and distributors for service and parts in all principal cities.
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TRIPLE COMBINATION PUMPERS—500 TO 2000 GPM . . . SQUAD AND HOSE CARS . . . AERIAL, CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

# SAN DIEGO

## organizes Traffic Complaint Records with ½ the work

### Traffic Officials cite savings achieved through Kardex Control System

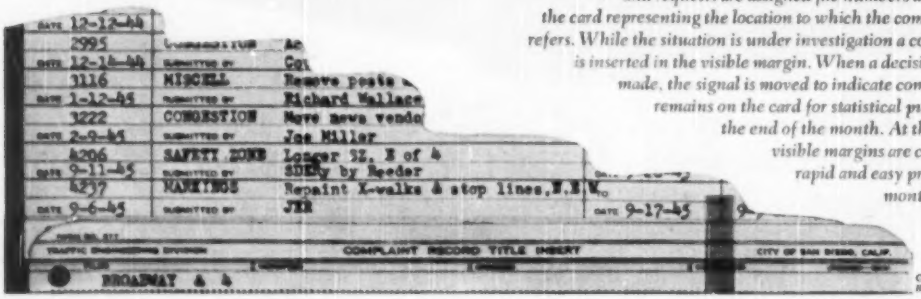
Kardex Visible Control of Traffic Complaints and Suggestions, formerly handled in a vertical card file by the San Diego Traffic Engineering Department, has meant spectacular savings in the time needed to operate the record *plus* greatly improved service in answering telephone inquiries, and in other related functions. Record review, a tedious, time-consuming job with the old "blind" file, is now accomplished by merely glancing down the visible margins of the Kardex record and noting locations of signals. Thus, a rapid survey of current traffic conditions is provided, and decisions are made instantly as to where to direct corrective action.

In the words of San Diego's Chief Traffic Engineer: *"This work-saving record is a true economy and a real necessity to the operation of the Traffic Engineering Dept."*

Send for the issue of *Systems for Government Administrators* which carries a detailed, illustrated description of San Diego's outstandingly successful Traffic Complaint Control record. Anyone holding an executive position in public administration is eligible to receive *Systems for Government Administrators* free of charge. Direct a request with your name, title and address to Management Controls Reference Library, Room 1540A, 315 Fourth Ave., New York 10, N.Y.

**Remington Rand**
THE FIRST NAME IN RECORD SYSTEMS

*One clerk devotes only a third of his time to the operation of this record of five thousand locations filed by intersections and intervening points. This includes the making of all reports pertaining to the data in the record. Complaints, suggestions, and requests are assigned file numbers and posted to the card representing the location to which the communication refers. While the situation is under investigation a colored signal is inserted in the visible margin. When a decision has been made, the signal is moved to indicate completion and remains on the card for statistical purposes until the end of the month. At that time, the visible margins are consulted for rapid and easy preparation of monthly progress reports.*

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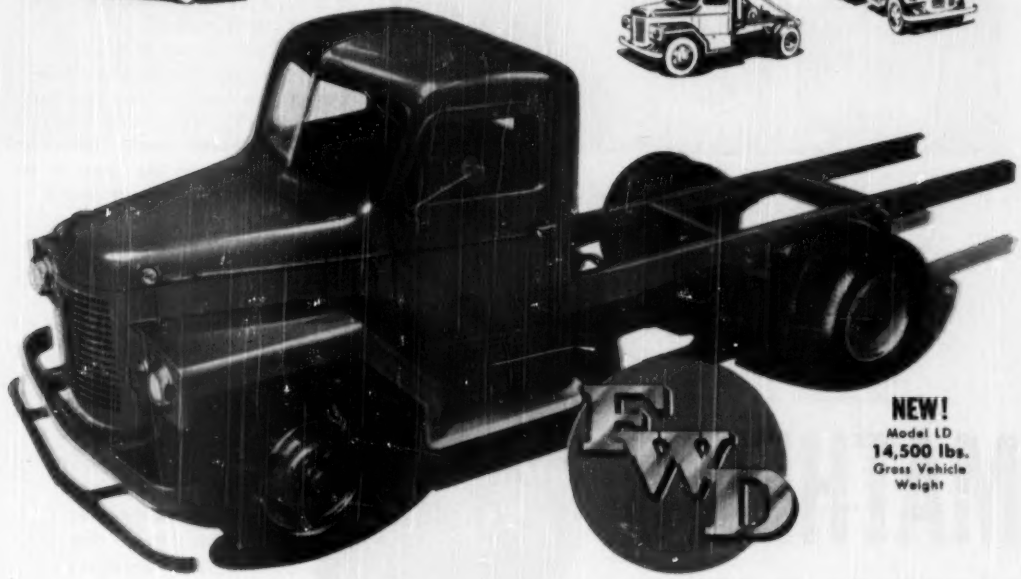
# Created for an Entirely New FWD work-range




**NEW!**
Model LD
**14,500 lbs.**
Gross Vehicle Weight

## At last! A true LIGHT-DUTY four-wheel-drive

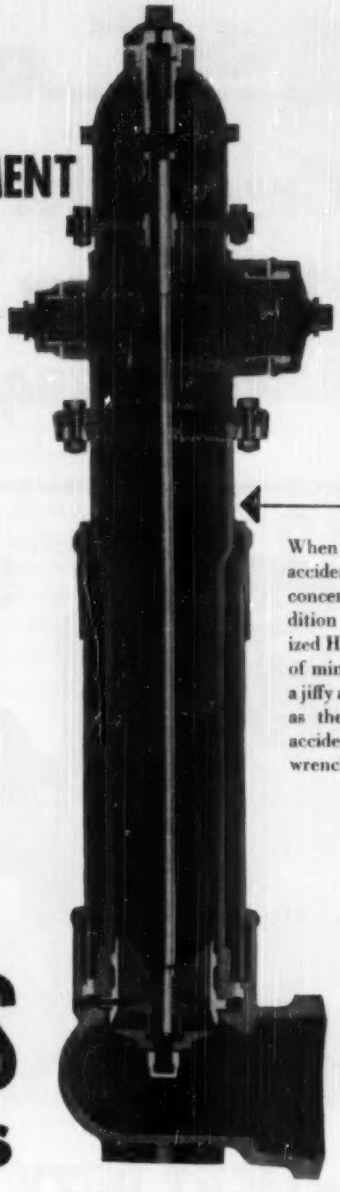
You never before have had a choice of owning a truck like the LD. So, check over your operations now—to see where this light-duty four-wheel-drive can save and make money for you, too! Yes, conventional trucks and *conversions* have sought to answer the needs of this work-range. But only a *true* four-wheel-drive can bring you the correct distribution of load and power—for maximum traction, economy and all-weather safety. You also get a *real truck engine* and *real truck components*—so essential to efficiency in this largest segment of the over-all truck field.

*GET ALL THE FACTS on the LD! Ask for this folder, "The Story of the LD". See your FWD distributor or write FWD.*

THE FOUR WHEEL DRIVE AUTO CO.
Clintonville, Wisconsin
*Canadian Factory:* Kitchener, Ont.
World-Wide Sales and Service

***Built by the Makers of America's Foremost Heavy-Duty Trucks***

# SPEED OF REPLACEMENT MEANS SAFETY FOR THE COMMUNITY



When a hydrant is broken in a traffic accident, it is a matter of community concern to get it back in operating condition promptly. The Mathews Modernized Hydrant can be restored in a matter of minutes! Two men can do the job, in a jiffy and *without excavating*, just as soon as they can get to the scene of the accident with a spare barrel and a lug wrench.

# MATHEWS HYDRANTS

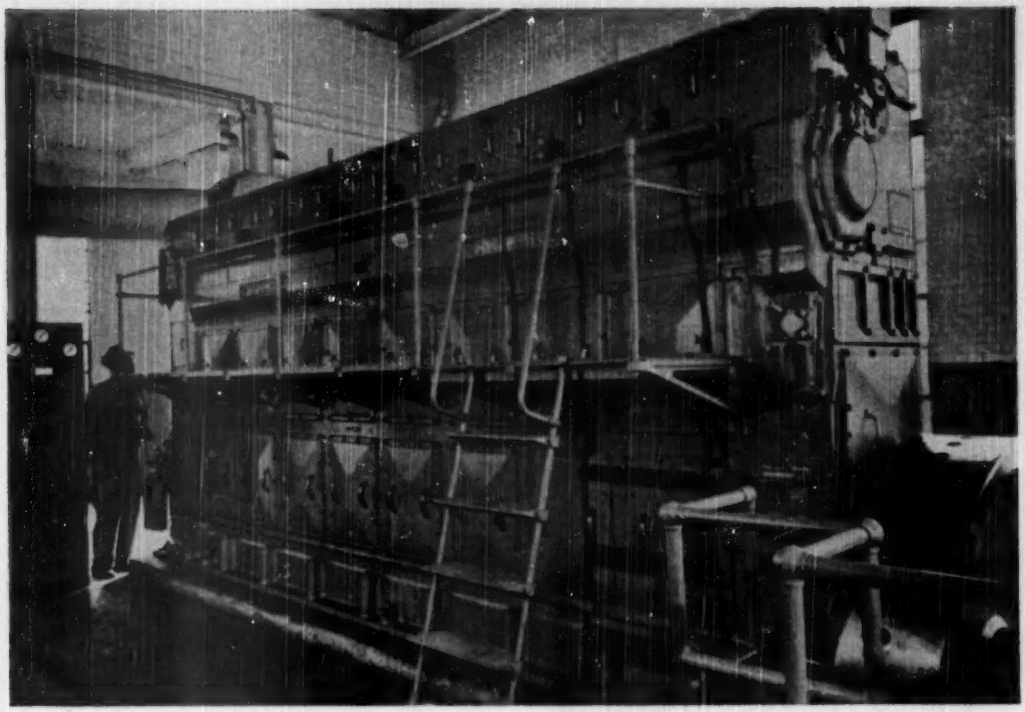
**Made by R. D. Wood Company**

**Public Ledger Building, Independence Square, Philadelphia 5, Pa.**

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

THE FIREMAN'S FRIEND

**MATHEWS MODERNIZED HYDRANTS SET THE PACE:** Easily maintained because simple in construction • All working parts contained in the replaceable barrel • Stuffing box cast integral with nozzle section • Head can be turned 360° • Replaceable head • Nozzle sections easily changed • Nozzle levels raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for extra strength, toughness, elasticity • Operating thread only part to be lubricated • A modern barrel makes an old Mathews good as new



# Lower Cost Power From Standby Superior Results in a Full-Time Job

Folks in an Iowa City needed additional power for peak loads to supplement the two steam turbines in their Municipal Power Plant. To get this power economically they chose a Model 80 Supercharged Dual Fuel Superior.

In normal operation in this municipal system the Superior engine operates on gas. But when necessary, the Dual Fuel feature permits instant conversion from gas to oil. All the operator has to do is push a button to select the type of fuel. Mixing adjustments on Superior Dual Fuel engines are automatically controlled for any combination of fuels.

The plant engineers found that the Superior engine was producing electrical power cheaper than the regular steam turbine units. As a result the standby unit was given a full-time job to reduce operating costs.

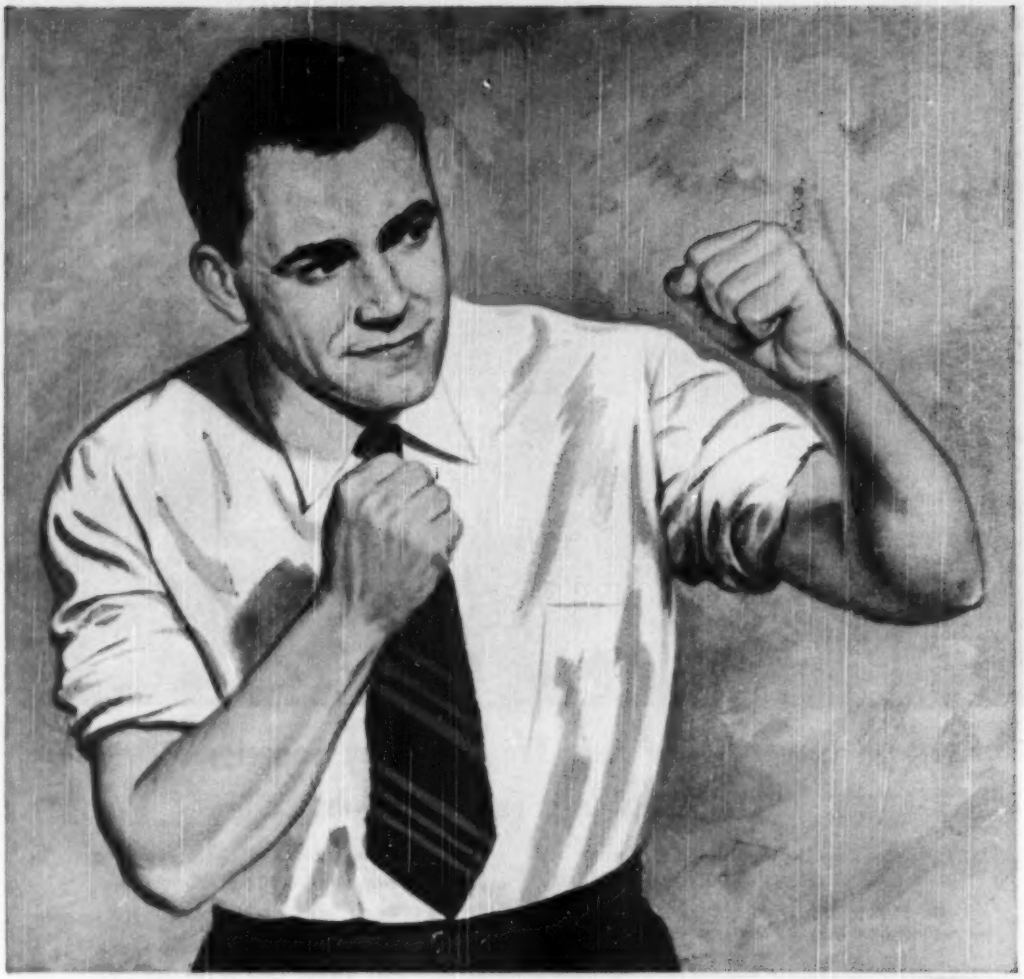
The remarkable success of this Superior engine application is not unusual. Chances are, the same results can be accomplished for you. A Superior representative will be glad to call at your convenience and show you how it can be done. In the meantime, write for your free copy of *Superior Diesel For Stationary Application.*

**THE NATIONAL SUPPLY COMPANY**
**SUPERIOR ENGINE DIVISION**
**Plant and General Sales Office: Springfield, Ohio**

THE NATIONAL SUPPLY COMPANY — NSCO

*Superior* DIESELS

**Locomotive · Marine · Oil Field · Stationary**



# We hope you'll still keep your guard up!

THIS IS HOW you greeted us when we first introduced you to the General Electric Disposall.®

And it was the correct stance—the right stand—to take in the face of a completely new and revolutionary sanitation idea.

Rightly, you put the burden squarely on us to prove that the Disposall method of garbage elimination would benefit your community in every way. It was not enough that the Disposall would take all food waste, shred it into tiny particles and flush it away into sewer or septic tank.

You wanted "show me" evidence that there would be no danger of sewage stoppages, or of any of the problems which might affect normal sewage-works operation.

We believe that we have convinced sanitation officials in cities, large and small, as to the merits of the Disposall. It has been accepted almost everywhere as a clean, sanitary, economical method of garbage elimination. When necessary, sanitation codes have been revised to permit its use in the community.

Doubtless, there are other food-waste shredders that will be able to convince you of their efficiency and economy. Appliances that will meet the strictest examination.

But, because the Disposall is the pioneer in the field of scientific garbage elimination—and has proved itself in the laboratory and in countless homes—we believe you will be interested in reading the specifications below. They are the very specifications used in the development and perfection of the General Electric Disposall.

They may be of use to you in drawing up your own list of requirements.

## GENERAL ELECTRIC'S SPECIFICATIONS FOR ITS FOOD-WASTE SHREDDER— THE DISPOSALL

**1.** *The Disposall has a flow interlock that permits operation with cold water only.*

This requirement is necessary because experience has shown that only with cold water will greases become congealed within the cylinder. With congealed grease broken up into small particles, mixed with food waste and carried off through the drain, there can be little tendency for greases to adhere to the walls of the pipe.

**2.** *The discharge from the Disposall remains in a fluid state. The correct relationship between the amount of food waste and tap water is maintained by controlled shredding.*

This equalization of water and food waste permits the ready flow of effluent through traps, drain, or soil lines in a manner to prevent clogging.

**3.** *The Disposall shreds food waste to a uniform size, to meet the following requirements: 100% shall pass a ½-inch screen. At least 90% shall pass a ¼-inch screen. Not more than 5% shall pass a #40 sieve.*

(Screens should be the United States standard, and weight should be taken on a dry basis.)

In other words, the particles of shredded food waste are of the correct size, to permit effective sewage clarification and sludge digestion at the treatment plant.

**4.** *The food-waste shredder is self-scouring, with no fouling surfaces.*

This feature prevents objectionable odors; keeps the unit clean as a whistle.

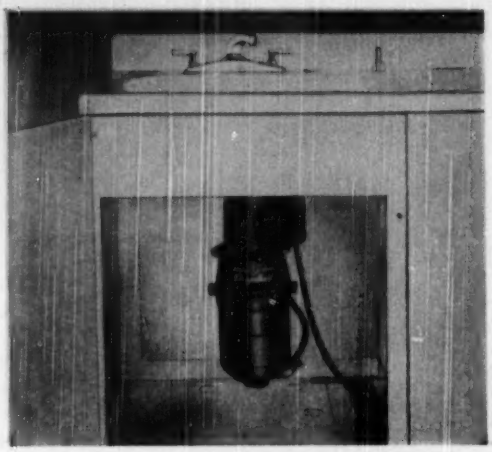
**5.** *The food-waste shredder provides maximum protection against electrical or mechanical hazards.*

As a safety measure, the shredding compartment is inaccessible during operation.

**6.** *The food-waste shredder is designed for connection to the plumbing, in accordance with the local plumbing code, and should be free from any cross-connection.*

This regulation eliminates any makeshift, homemade hook-ups, and permits the proper operation from sink to sewage treatment plant.

**For further information** about the Disposall method, simply write to Department AC 506, General Electric Company, Bridgeport 2, Connecticut.



**The General Electric Disposall** is easily installed in almost any sink. Here it is shown installed in our electric sink. Food waste is scraped into drain opening, and safety cover is placed in position. The cold-water tap is then turned on, starting the Disposall operation. Food waste is shredded and flushed away automatically.

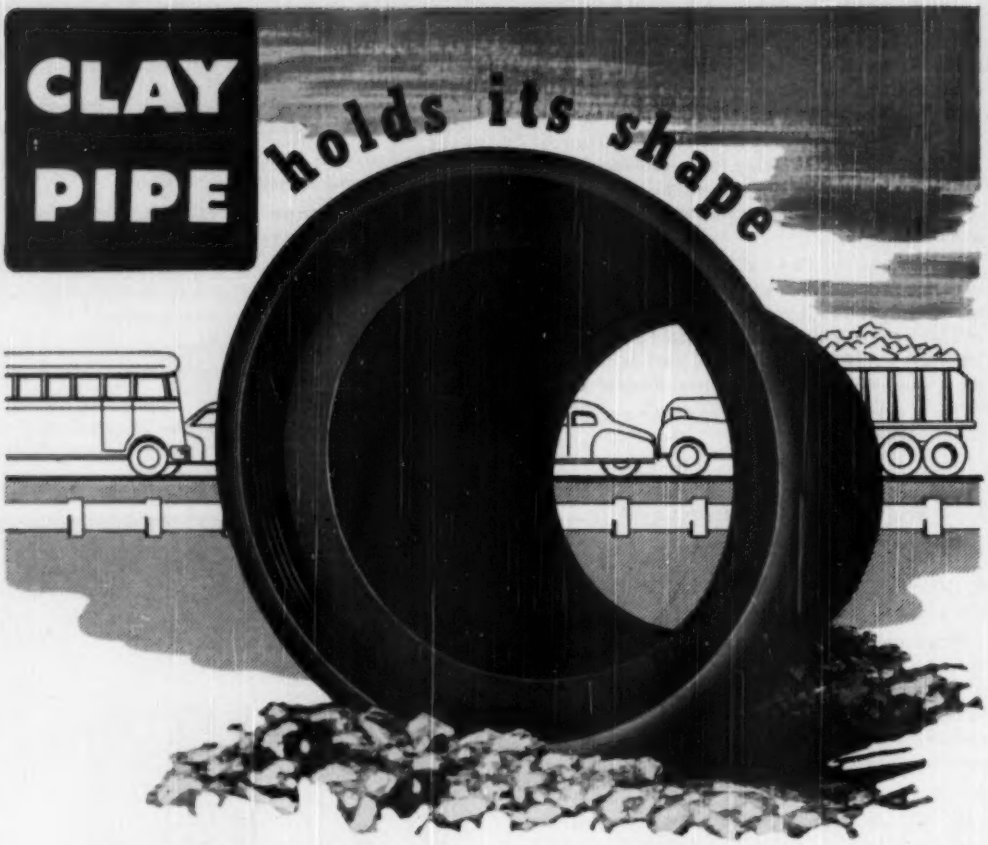
P. S. Thousands of Disposalls are operating successfully on private septic tank systems.

**Disposall**

*CONVERTS FOOD WASTE TO SEWAGE—ELIMINATES "GARBAGE"*

**GENERAL ELECTRIC**

# CLAY PIPE holds its shape



VITRIFIED CLAY PIPE is fired *hard* . . . it does not lose shape and flow capacity. Its rigidity keeps it round and smooth under the live or dead loads for which it is rated. Even under high temperatures, Clay Pipe holds its full inside diameter. It won't squash out — can't be cut or chewed by the rotary tools used to remove bulky obstructions from the line. In fact, Clay Pipe can't be affected by *any* of the common causes of sewer failure. It doesn't rust, corrode, melt, crumble, or disintegrate. Its permanent, trouble-free life doesn't depend upon sulphide control devices or the delicate balancing of such factors as sewage temperature, velocities and age of sewage. It's the *only* pipe built to withstand any operating conditions.

**NATIONAL CLAY PIPE MANUFACTURERS, INC.**
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
1105 Huntington Bank Bldg., Columbus 15, O.
206 Connally Building, Atlanta 3, Georgia

**SPECIFY** *Vitrified* **CLAY PIPE**

**STANDARD-STRENGTH CLAY PIPE** | **EXTRA-STRENGTH CLAY PIPE** | **PERFORATED CLAY PIPE**

0-650-6

*Another* **ROCKWELL CONTRIBUTION**

**TO BETTER METER PERFORMANCE**

**PITTSBURGH EQUITABLE**

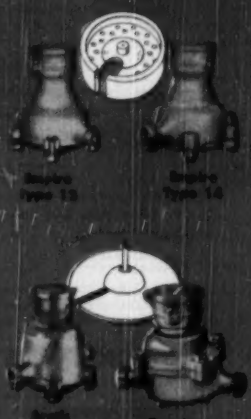
*Water Meters*

*Precisely* **TESTED UNDER ACTUAL OPERATING CONDITIONS**

*This* **ELECTRONICALLY CONTROLLED TESTING PLANT** in our water meter factory is the only one of its kind. It will handle up to 240 meters at a time on four test lines. In it, your orders for any of the domestic sizes of Pittsburgh Equitable meters (Arctic, Tropic or Empire) will be precisely tested for accuracy *to your specifications.* The control panels can be quickly adjusted to match the conditions that will be actually found in your system. For example, where specified, meters going into warm climates can be tested for accuracy and response at water temperatures of 100° F. or higher.

By duplicating your actual operating conditions on the test stand we assure accurate measurement from the word "go." Now, more than ever before, good basic designs, plus careful workmanship and exacting tests make your choice of any Pittsburgh Equitable meter an outstanding value.

YOUR *Unrestricted Choice* OF METER TYPES



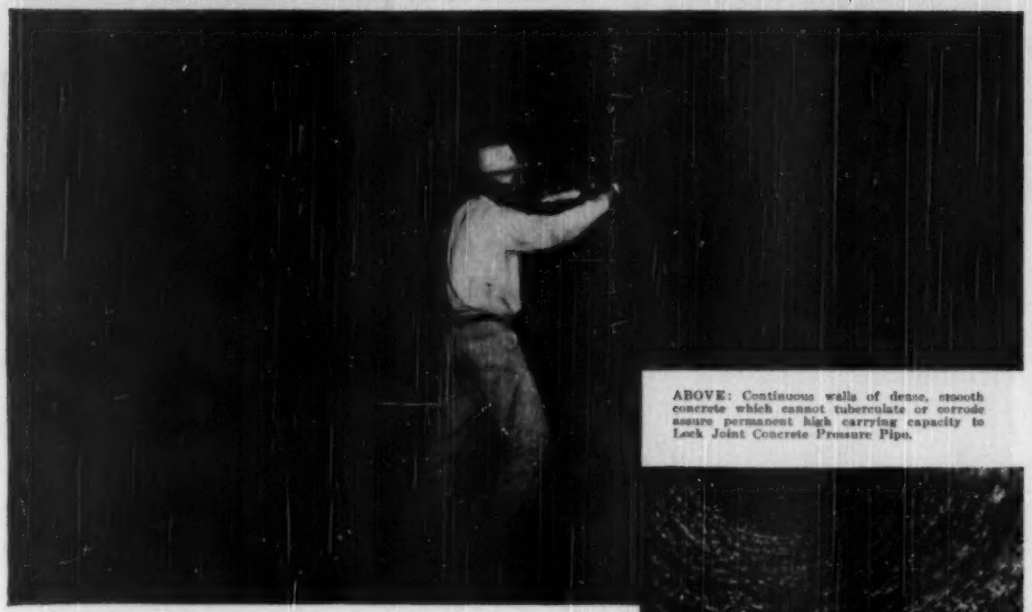

**Pittsburgh Equitable Meter Division**

**ROCKWELL MANUFACTURING COMPANY**

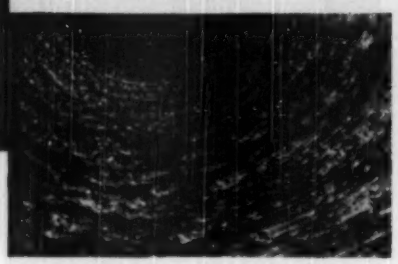
**Pittsburgh 8, Pa.**

Atlanta Boston Chicago Columbus Houston Kansas City Los Angeles New York Pittsburgh San Francisco Seattle Tulsa

# CONCRETE *is the answer to your main problem*



ABOVE: Continuous walls of dense, smooth concrete which cannot tuberculate or corrode assure permanent high carrying capacity to Lock Joint Concrete Pressure Pipe.



ABOVE: The tuberculated condition of this metallic pipe line reduces its carrying capacity by 50%.

Tuberculated mains—corroded mains—leaky mains—all cost municipalities, taxpayers and industry immense sums every year in added pumping costs, maintenance and repairs. Yet, by the use of Lock Joint Concrete Pressure Pipe, all of this unnecessary expense could be eliminated.

## 1. LOCK JOINT PRESSURE PIPE
### does not tuberculate . . .

**RESULT**
- No excessive pumping costs
- No periodic cleaning costs
- No loss of income from inadequate delivery of water to the consumer

## 2. LOCK JOINT PRESSURE PIPE
### does not pit or perforate from electrolysis or corrosion

**RESULT**
- No cost for major repairs
- No cost for periodic patchwork
- No loss of revenue while the line is shut down for emergency repairs.

*Consider these facts when you plan your next water supply or transmission main and specify Lock Joint—the pressure pipe of perpetual economy.*

*Lock Joint Pipe Company for over forty years has specialized exclusively in the manufacture of reinforced concrete pipe for water supply and transmission mains as well as for sewers, culverts and subaqueous installations.*

**LOCK JOINT PIPE COMPANY**

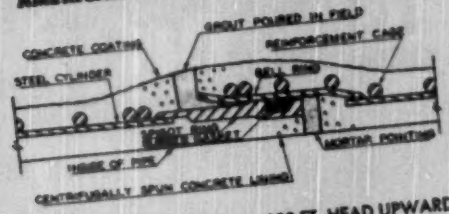
*Est. 1905*

P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

BRANCH OFFICES: Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. Wichita, Kan. • Kenilworth, N. J. • Hartford, Conn. • Tucumcari, N. Mex. Oklahoma City, Okla. • Tulsa, Okla.

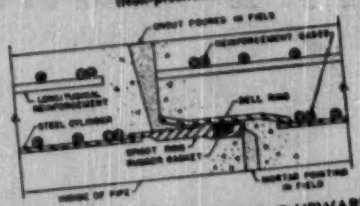
## AMERICAN CONCRETE CYLINDER PIPE




SIZES 14" TO 36" INCLUSIVE • 150 FT. HEAD UPWARD
(65# PRESSURE UPWARD)

## LOCK JOINT CONCRETE CYLINDER PIPE

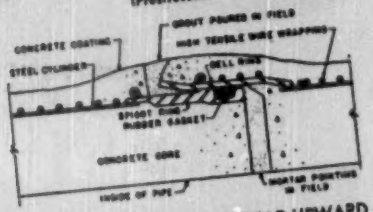
(Non-prestressed)




SIZES 30" TO 144" • 100 FT. HEAD UPWARD
(45# PRESSURE UPWARD)

## LOCK JOINT CONCRETE CYLINDER PIPE

(Prestressed)

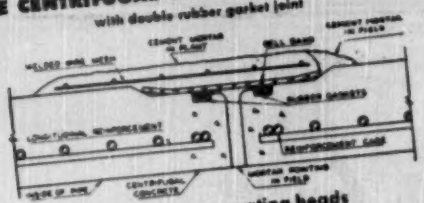



SIZES 24" TO 84" • 150 FT. HEAD UPWARD
(65# PRESSURE UPWARD)

# REINFORCED CONCRETE PRESSURE PIPE REDUCES COST OF DELIVERED WATER

## HUME CENTRIFUGAL CONCRETE PRESSURE PIPE

with double rubber gasket joint




For moderate operating heads
SIZES 12" TO 84" INCLUSIVE
For working pressures, as designed, not to exceed 150 ft. of head

### Combines Strength of Steel with Protection and Permanency of Concrete

Advantages in economy, sustained performance and permanency are responsible for establishing the trend toward reinforced concrete pressure pipe for main water supply lines.

For over 40 years, this company has contributed importantly to the development of reinforced concrete pressure pipe design and construction. Its products, in the sizes indicated on the diagrams, now cover the entire range of requirements common to American water works engineering practices.

### There is a type to meet the needs of your project

Allowing for over-lapping from one class of pipe to another because of special conditions related to specific installations, or because of the economical range of any of the four types of pipe, the diagrams show the general field of use for each type, consistent with the factors of size and operating pressure.

Each is outstanding for its purpose. Each incorporates the physical properties of steel with the structural and protective properties of concrete. Each assures maximum economy in initial cost, ease of installation, sustained carrying capacity, trouble-free service and permanence.

Consider these advantages to your project in helping to reduce the cost of delivered water. Write for any additional information desired.

There's a plant in your area

American

Concrete Pipe for Main Water Supply Lines, Storm and Sanitary Sewers, Subaqueous Pipe Lines

P.O. Box 3428, Terminal Annex, Los Angeles 54, California

Main Offices and Plant—4635 Firestone Blvd., South Gate, Calif.

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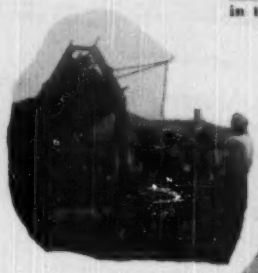
AROUND the WORLD

OSLO, NORWAY — SINGAPORE, M. P.

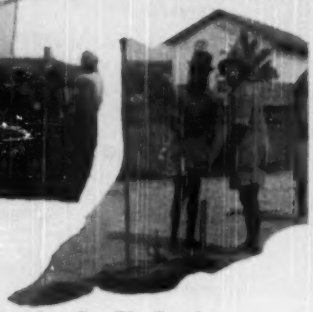
"Flexible" Power Bucket Machines, Power Drive Rods and Tools make work easier in the Orient too.

*All this debris taken from 10" pipe. Section shows perfect job.

WATER LINES



SEWER LINES



*"Flexibles" in OSLO and SINGAPORE—as well as in the U. S. A.*

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# STOP WATER SHORTAGES

## Provide a "Ready-Reserve" for Dry Seasons and Emergencies

# NOW!

Above: A series of BS&B Bolted Tanks for water storage with Safwalk Stairs and Walkway.

Can be used to store asphalt, road oil and other semi-solids.

**A water shortage can be disastrous to a town and its citizens. Emergencies arise when normal water sources become contaminated—depleted by "dry spells" or consumed beyond a safe reserve in fire fighting. Then, water must be shipped in at great expense.**

**A reserve water supply—on the spot—can safeguard towns and cities against this danger. City managers and councils find that BS&B Bolted Steel Tanks provide a "ready reserve" for such emergencies at amazing low cost. Often they pay for themselves with money saved on long water hauls.**

**BS&B Tanks have given dependable service for generations. All over the world, BS&B Tanks prove daily to be ideal water storage . . . ideal protection for citizens against dangerous water shortages. Be prepared for emergencies!! Provide a reserve water supply, ready for instant use . . . NOW!**

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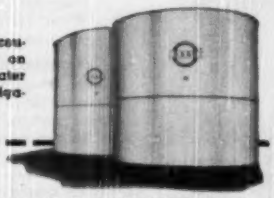
- Many sizes available to fill need of various size towns and cities.
- Easy to erect without special tools or skill. Easy to clean.
- Weatherproof. Fireproof. Bottle-tight.
- Can be easily moved. Size can be increased or decreased.

**FREE CATALOG** Mail coupon below for free catalog on BS&B Bolted Steel Tanks for water storage. Not the slightest obligation to buy.



**BS&B BOLTED TANKS**

**BLACK, SIVALLS & BRYSON, INC.**
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Please send me without obligation your FREE catalog and prices on Bolted Tanks for water storage.

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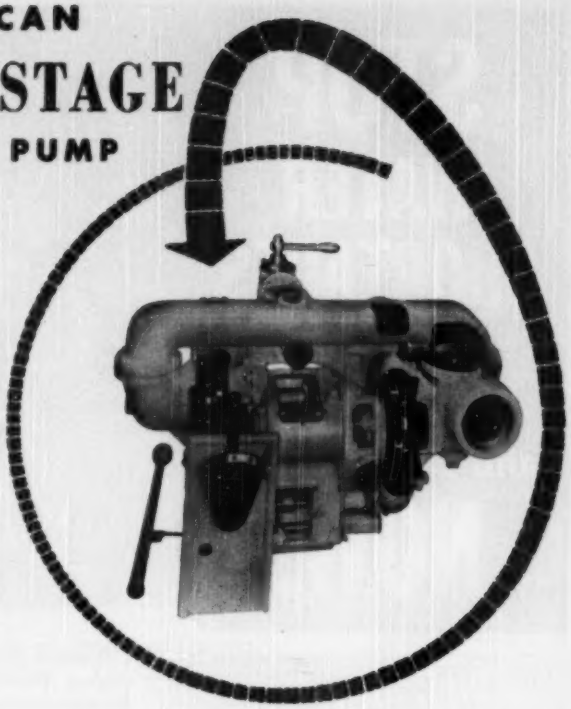
## BARTON-AMERICAN

# DUPLEX-MULTISTAGE

## CENTRIFUGAL FIRE PUMP

The Barton-American Duplex-Multistage Fire Pump is the only two stage fire pump with three operating characteristics. Two independent pumps driven by individual gear trains — breakdown of one still leaves one in operation. No other pump is as adapted to present day fire fighting requirements. Possible to operate high pressure fog while regular pressure lines are operating at the same time. No other pump so simple — no other pump so dependable. Available for pressures as high as 850 lbs.



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**AMERICAN-MARSH PUMPS**

BATTLE CREEK MICHIGAN

*Pumps And Only Pumps Since 1873*

## 3 IMPORTANT BULLETINS

on subjects vital to

## WATERWORKS

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**A. Water Pressure.** 16-page bulletin describes new Bristol Series 500 Recording Gauges—for permanent mounting or portable use.

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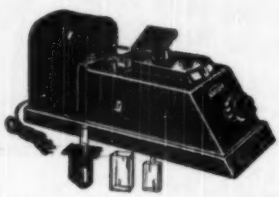
A COMPLETE LINE FOR WATER WORKS

# BRISTOL

## KLETT SUMMERSON
## ELECTRIC PHOTOMETER

***Adaptable for Use in Water Analysis***



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

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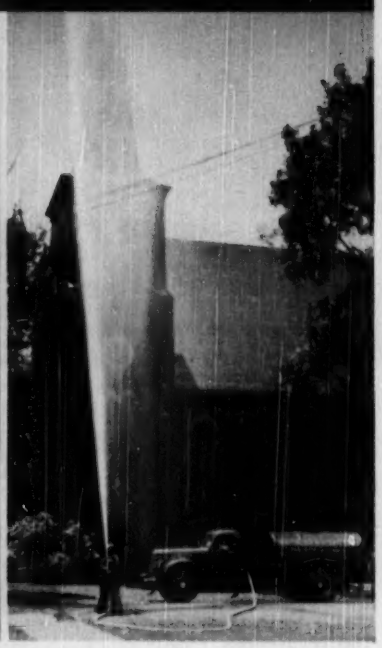

Perhaps you've seen an Etnyre in action sanitizing city streets. If so, you've noticed how it cleanses streets up to 42 feet in width on ONE trip . . . reducing bacterial count of street dust by 65% . . . driving all litter to the sewer so that the street behind the flusher is sparkling clean, refreshingly cool . . . operating day or night, irrespective of parked cars!

But did you know that an Etnyre Flusher can be quickly converted to an efficient firefighting unit, at low cost? By ordering your Etnyre with fire-fighting attachment, you get a pump booster which increases your hydrant pressure by 80 lbs. You get connections for a hydrant or suction hose, also for fire hose and nozzle. And for rural communities, you can get a self-filling attachment enabling you to pump from a pond, water tank, or well.

Get the facts on this versatile Etnyre Flusher — write, wire, or phone for data and prices . . . now!

## ETNYRE Street Flushers

*"THE MACHINE OF A DOZEN USES"*

**E. D. ETNYRE & CO., Oregon, Illinois**

# 4 days' work
## now done in 3

**JAEGER MODEL 125**
*obsoletes the 105.*

125 ft. of air at 100 lbs. pressure runs 2 heavy or 3 medium breakers at top efficiency—doing 30% to 40% more work than same tools with 105 ft. of air.

All Jaeger "new standard" sizes give you comparably increased production.

*See your Jaeger distributor or ask for Catalog JC-8*

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Columbus 16, Ohio

Other "new standard" ratings are 60—185—250—365—600 cfm.

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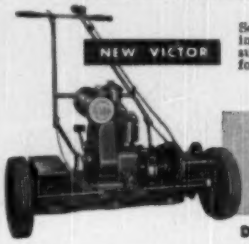
PAVING EQUIPMENT

# IDEAL heavy duty POWER MOWERS

IDEAL Power Mowers are designed to be true time savers—not time wasters. You can trust IDEAL heavy duty models for real economy in lawn care. From the big, heavy, 5 H.P. riding type "Caretaker" down to the smaller 1.5 H.P. walking type "New Victor", the entire IDEAL line is characterized by ruggedness, efficiency and mechanical reliability.

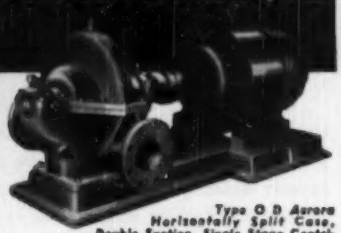



See your IDEAL dealer for information on models to suit your needs. Or write for catalogs.

**IDEAL**
**POWER LAWN MOWER CO.**
Dept. C-50, Springfield, Mass.

# INTEGRITY *Counts in* PUMPS, *too*

*This Truly Great* AURORA TYPE O D CENTRIFUGAL PUMP



*Type O D Aurora Horizontally Split Case, Double Suction, Single Stage Centrifugal Pump.*

*for* general water supply, for municipalities, industrial establishments.

also for handling condenser circulating water, wash water, liquids in paper mills and distilleries, chemical solutions, oils in oil fields and refineries, irrigation, etc.

The ultimate in design and perfection—type O D pumps—in capacities to 4,000 G.P.M. and heads to 300 ft.—are accessible, compact and lasting. The horizontally split-case type of design permits removal of upper half of casing without disturbing suction or discharge. The impellers and water channels are streamline designed to minimize flow resistance and avoid turbulence, cavitation and consequent corrosion and erosion.

**Write for CONDENSED CATALOG "M"** and O D Bulletin 185

**APCO TURBINE-TYPE PUMPS**
For high pressure, Small capacity requirements (up to 150 G.P.M.). Wide operating range characteristics. No metal to metal contacts. Handles non-lubricating liquids without wear. Only one moving part—the impeller.

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Aurora Always Pumps

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Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

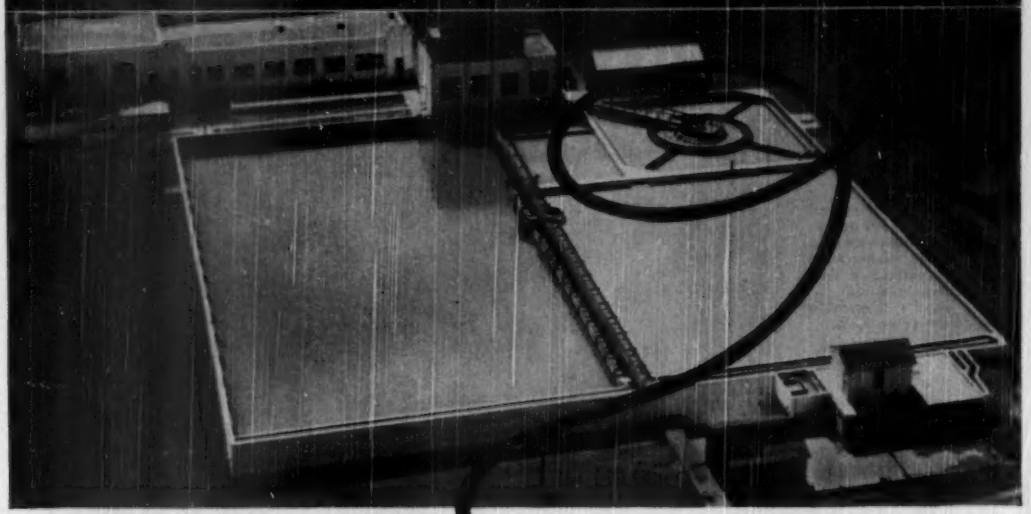
*Prompt Shipment*

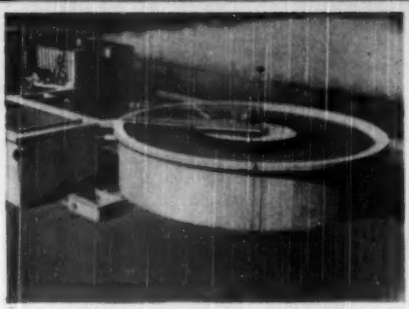
*Inquiries and orders solicited*

**NORTHERN GRAVEL COMPANY**
**Muscatine, Iowa**

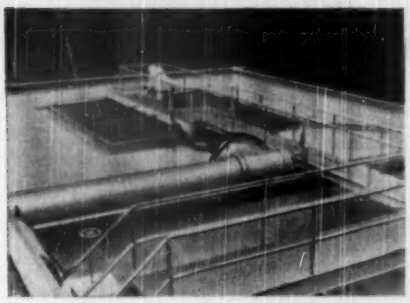
**P. O. Box No. 307** **Phone: 193**

# HOW TO TURN AN EXISTING BASIN





ACCELATOR installations: (Above) City of Gainesville, Fla.. (Below) City of Coshocton, Ohio.



## Into a Modern Water Conditioning Plant!

## The ACCELATOR®
### MAY BE ROUND OR SQUARE

At Muskogee, Oklahoma, a cyclone severely damaged the water treating plant. In rebuilding, they placed a *square* Accelator within the still-standing square settling basin. This saved the extra cost of building an external *round* basin. Today, the compact 70 ft. square ACCELATOR turns out 50% more clarified and softened water than the 210 ft. square settling basin did before! ★ Square, or round, the Accelator gives *any* municipality the means of converting turbid or hard water into a sparkling, clear, soft effluent. Over 1100 Accelator installations economically treat more than *One Billion* Gallons of water *every day!* Get all the facts.

**SEND FOR..**

*our colorful new 28-page Bulletin No. 1825. It's packed with vital information about this better, more economical way to condition water.*

INFILCO

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**INFILCO INC.**

GENERAL OFFICES: 325 WEST 25th PLACE • CHICAGO 16, ILLINOIS

SALES OFFICES IN TWENTY SIX PRINCIPAL CITIES

WORLD'S LEADING MANUFACTURERS OF WATER CONDITIONING AND WASTE TREATING EQUIPMENT

# Signs OF PRIDE

## MIRO-FLEX STREET-NAME ASSEMBLIES

Civic organizations and women's clubs all over the country are making better street identification their civic projects . . . signs of constructive community spirit.

Naturally, they choose Miro-Flex, because Miro-Flex signs are sturdy, easily seen, easily read. They're made of zinc-coated, bonderized steel, embossed, baked enamel finish.

*Write* FOR FREE CATALOG

6-50

MANUFACTURED BY

**MIRO-FLEX CO., INC.**

1824 EAST SECOND STREET—WICHITA, KANSAS

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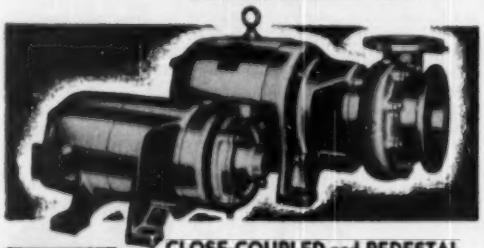
# *New... Different*

## THE "ALTA" LINE FOR INDUSTRIAL USE



**CLOSE-COUPLED and PEDESTAL GORMAN-RUPP PUMPS**

This new line of centrifugal pumps combines all the advantages of exact hydraulic engineering with best mechanical design.

Alta Pumps are outstanding in efficiency serving a capacity-head range up to 1000 G.P.M. and 200 feet head with 14 sizes, 1 to 4 inches.

Open as well as enclosed type impeller for slurry and other services.

*For detailed information ask for Bulletin 9-IP-11.*

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO

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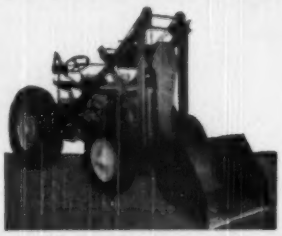


## White Front-End Loaders Have Extensible Booms

The extending boom feature of White Loaders has been greatly commended by all users. It permits loading trucks without hand spreading or coming close to truck body. Can fill high bins or extend over walls.

Bucket is close to wheels when loading. At top it moves forward to discharge 2½' ahead. Can be dumped at any point in lift.

Mechanical operation, from front of engine. Backfiller blade can be put in bucket seats.

Made ONLY for Oliver 77, 88; Case DI, SI, CI; Minn.-Moline UTI; International 1-6, ID-6, 1-30, No. 20.

Write for Circulars

White Mfg. Co.

ELKHART INDIANA

*Lithographed on stone by Rockwell Kent*


**U.S. cast iron PIPE**

FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

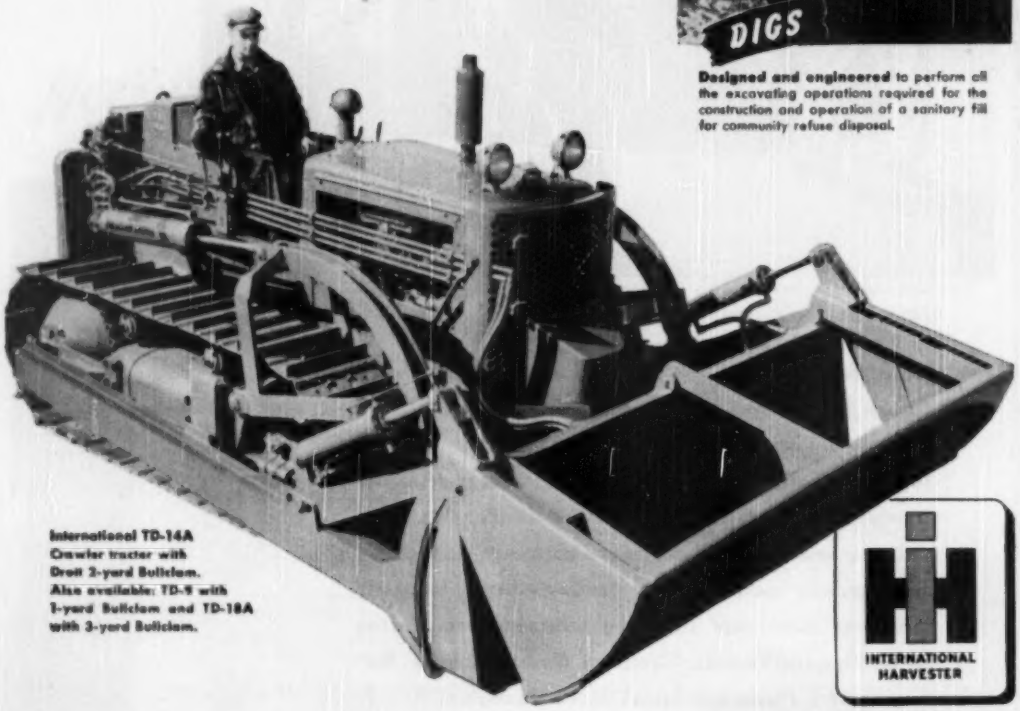
"Meet the customers' needs" has been our watchword for more than fifty years. Whether it's pipe seven feet, or a few inches, in diameter—or a complicated fitting—or a special casting—we have the equipment and the technical skills to meet almost any need for cast iron pressure pipe and fittings. Taking advantage of process developments and utilizing scientific methods to control quality, our plants are regularly manufacturing products that adequately meet our customers' exacting requirements. **United States Pipe and Foundry Company, General Offices: Burlington, N. J. Plants and Sales Offices Throughout U. S. A.**

# Does the

# OF

Nothing compares with the Drott Bullclam and International Crawler tractor combination for building a *Sanitary Fill*—the only equipment specifically designed and engineered to perform efficiently all phases of *Sanitary Fill* construction and operation. It does the whole job alone, turning wasteland and community refuse into valuable, raised recreational areas. Playgrounds, ballparks—even airports—replace expensive, disease-breeding dumps in any community when this Tractor and Bullclam unit takes on the refuse-disposal job.

**Designed and engineered** to perform all the excavating operations required for the construction and operation of a sanitary fill for community refuse disposal.



**International TD-14A Crawler tractor with Drott 2-yard Bullclam. Also available: TD-9 with 1-yard Bullclam and TD-18A with 3-yard Bullclam.**

INTERNATIONAL HARVESTER

# *Complete Job-*
# SANITARY FILL

**Designed and engineered** to compact bulky refuse thoroughly, not only with tractor treads but, in addition, with the exclusive Bullclam ironing and crushing action.

**Designed and engineered** to secure and transport cover material while excavating additional disposal area. It spreads this material smoothly over the compacted refuse.

**Designed and engineered** to do the final levelling and grading of the completed sanitary fill area, preparing it for immediate public use for recreation, parking, etc.

■ Dependable and economical International Crawler tractors equipped with Drott Bullclam shovels, can be your community's greatest benefactors, just as they have been for others throughout the country. They'll cut refuse-disposal costs, eliminate the unsightly dump or smoking garbage burner while contributing new land for public pleasure.

Look into the possibility of cleaning up your refuse-disposal problems with this versatile *One-Man Sanitary-Fill Builder*. Contact your International Industrial Power Distributor and ask him to demonstrate. For detailed information on the Drott Bullclam Method of Sanitary Fill, write Drott Manufacturing Corp., Milwaukee 8, Wisconsin.

**INTERNATIONAL HARVESTER COMPANY**
**Chicago**

•

**DROTT MANUFACTURING CORP.**
**Milwaukee**

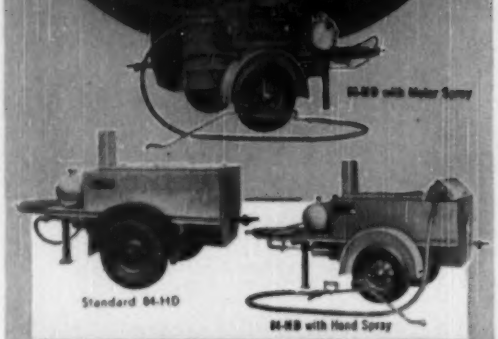
# DROTT-INTERNATIONAL
## TRACTOR AND BULLCLAM COMBINATION

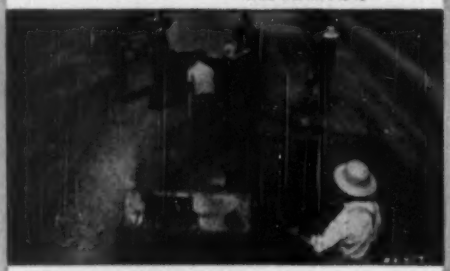
*speed up road repairs with a*

# LITTLEFORD

model no. **84-HD**

## TAR AND ASPHALT KETTLE



**THE LITTLEFORD 84-HD KETTLE** has a national reputation for being the most efficient operating unit ever used on road repair jobs. This unit has patented features that make it the fastest and safest heating kettle ever designed. These patented features are the Double Heat Circulation System that utilizes the entire heat output of the burner and the Screened Reservoir which keeps the cold material from cooling off the already melted material and a continuous reservoir of "hot stuff" ready for use at all times.

**FOR PATCHING AND REPAIRING** Highways, Roads, Streets, Runways, etc., this 84-HD does the job in less time and at lower cost than any similar unit.

**THE 84-HD** is even more efficient with the addition of a Hand Spray or Motor Spray Attachment. These attachments make the 84-HD a real maintenance unit.

MANUFACTURERS OF

"Tankar" Steam Heaters
"Kwik-Melter" Roofers Kettles
Trail-O-Rollers

"Spray Master" Pressure Distributors
Highway Brooms
Tool Heaters
Trail-O-Distributors

Asphalt Supply Tanks
No. 101 Utility Spray Tanks
84-HD Asphalt Kettles

LB LITTLEFORD

**LITTLEFORD BROS., Inc.**
500 East Pearl St., Cincinnati 2, Ohio

# FLORLINE

## STREET, SAFETY, PARKING LINES

**Efficiently Made at Walking Speed!**

**89.50** F.O.B. Detroit

Communities from coast to coast are drastically cutting the maintenance costs of traffic and parking lines with FLORLINE. Often pays for itself on the first job! Note these exclusive Florline advantages:

1 man, 1 hand operation. No attachments. Gravity feed.

Makes curved, straight, continuous or skip lines . . . 2, 3 or 4 inches wide with interchangeable carriages.

Holds 1½ gals. paint, lacquer, whitewash. Cannot spill. Portable, efficient, speedy. Pays for itself quickly. Easy to clean, transport and store. FULLY GUARANTEED.

Write today for folder and list of users. Dept. MB.

## H. C. SWEET CO.

12083 Woodbine Ave. Detroit 28, Michigan

**Dependable and long lasting, beautiful in action . . .**

## "Rain-Wave"

*Covers 50x50 ft. area furnished for hose or hoseless*

A SKINNER Quality Sprinkler that brings new beauty and health to lawns at a cost lower than you ever thought possible.

It slowly rocks a gentle, fan-like spray over an area approx. 50 ft. square. Uses 5 gallons of water per minute. Operates on usual city pressures. Available as a complete unit, or head only mounted on a special coupler for hoseless irrigation.

SKINNER SYSTEM OF IRRIGATION

*Write today for full particulars. No obligation.*

**The SKINNER IRRIGATION COMPANY**
501 E. Canal St., Troy, Ohio

# Can you Please RUSH ME More HTH?

DON'T get caught with your stocks down. Always keep a good supply of Sanitation HTH on hand.

Emergencies are inevitable. In times of floods, broken mains, power failures, chlorinator breakdowns and other unforeseen developments, nothing is as reassuring as plenty of HTH — *in your stock room.* HTH is also handy for those everyday jobs — regular chlorination, sterilizing reservoirs, new water mains, water tanks, or filters.

Sanitation HTH is easy to use and store. It is dry, free-flowing and *always* provides a minimum of 70% available chlorine. Play safe — replenish your stocks of HTH today. For the many uses of HTH write today for your copy of "Hypo-Chlorination of Water." Mathieson Chemical Corporation, Mathieson Building, Baltimore 3, Maryland.

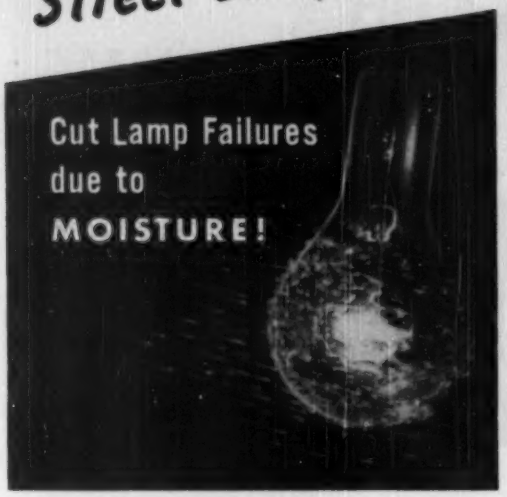
Sanitation HTH is available in cases of nine handy 5-lb. cans and in 100-lb. drums.

Mathieson CHEMICALS

8098

**SERVING INDUSTRY, AGRICULTURE AND PUBLIC HEALTH**

# Here's Proof! "WEATHERCOTE" Street Lamps...




- *Up to 75% reductions in expensive, premature lamp failures reported by users!*
- *Cost only a fraction more than ordinary street lamps!*

Wherever used, the new Amplex "Weathercote" lamps demonstrate remarkable resistance to water seepage, rain, fog and condensation. In the actual photograph above, you see a hot, lighted "Weathercote" lamp making direct contact with water spray and still standing up. With such protection, you can now prevent weather from killing lamps, from snarling your replacement schedules, from increasing maintenance loads. All *without* having to pay a high premium for this protection!

The many leading cities and utilities that use Amplex standard street lamps today know their record for reliable lighting at low cost. You'll find that Amplex "Weathercote" lamps offer you even more – the same reliable lighting, plus *extra* savings in maintenance costs. We'll gladly demonstrate.

For details on the most complete line of street lamps available, write to Amplex Corporation, Dept. 26, 115 Water Street, Brooklyn 1, N. Y.

**amplex**

Street Lamps • Industrial Infra-Red Heat Lamps • Fluorescent Lamps • Rough Service Lamps • Vibration Service Lamps



# LOOKING FOR IMPROVED COAGULATION ?

**FREE INFORMATION ON REQUEST**

FROM THE

TENNESSEE TC CORPORATION

ON FERRI-FLOC, THE NEW FERRIC IRON COAGULANT. FREE 35 PAGE BOOK ON WATER AND SEWAGE TREATMENT WITH . . .

**FERRI-FLOC**

To help you solve an urgent Community Problem

# G-E's Community-action "Package" to promote Better Recreation

**As a community leader, you are invited to preview this new, forceful, thought-provoking program**

This program offers just the tools you need to obtain public support for your community recreation program. They're all packaged in this latest program release in General Electric's More Power to America series—the Outdoor Recreation Program.

**HERE ARE THE PROGRAM'S HARD-WORKING TOOLS**

**"A Chance to Play"**—A dramatic documentary film, produced by The March of Time for the General Electric Company, dramatizing the need for adequate outdoor recreation areas for the whole community, day and night, and in all seasons.

**"Recreation Is Everybody's Business"**—This how-to-do-it manual for civic leaders outlines how to run a successful campaign for better recreation. There are 36 pages packed with useful information—prepared by General Electric in cooperation with the National Recreation Association.

**"Recreation Is Good Business"**—A 16-page booklet for industrial leaders demonstrates the How, Why and Where of Industrial Recreation—and how it ties in with community recreation programs.

**Audience Handout**—A questionnaire-type folder with a check-list to drive home the need for adequate recreation to the individual citizen.

***See For Yourself!***

Here is your opportunity to get proof that this is one of the finest made-to-order promotion programs you have ever seen.

Fill out the coupon below. We will send you the complete Outdoor Recreation Program containing a print of the 16mm movie "A Chance To Play", 10 copies of the 36-page manual "Recreation Is Everybody's Business", 10 copies of the 12-page manual "Industrial Recreation Is Good Business", and 200 copies of the audience handouts. If after inspecting this package you decide to use the program, mail us your check for $37.00—a price far below preparation cost. If not, you may return the material within five days without cost or obligation. Order by coupon only.

**Section A451-153, Apparatus Department**
**General Electric Company**
**Schenectady 5, New York**

Please send me the More Power To America Outdoor Recreation Program package. If we decide not to use this program, we will return it within 5 days; otherwise, we will remit the price of $37.00.

Name_____

Address_____

Position_____

Organization_____

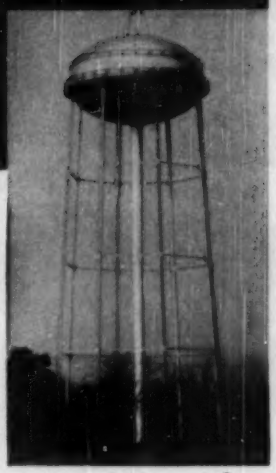
City_____ Zone____ State_____

GENERAL ELECTRIC

451-153

## For *Economical* Maintenance

# COLE ELEVATED TANKS

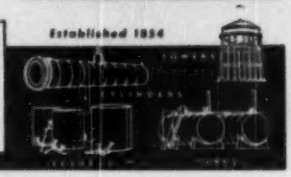


● Design plays an important part in tank maintenance. Experienced engineers design Cole tanks for easy access and minimum maintenance costs, as well as for permanence, safety, and dependability.

Send us your inquiries for tanks 5,000 to 2,000,000 gallons — stating capacity, height to bottom, and location. Write for latest Cole catalog—"Tank Talk."

**R. D. COLE**
MANUFACTURING CO.
NEWNAN, GA.

Established 1854

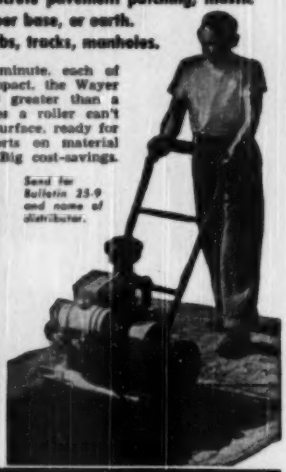


## a "10-TON ROLLER" that weighs only 240 lbs ....

**Super-tamps, finishes, cures 45 to 60 sq. ft. per minute of bituminous or dry concrete pavement patching, mastic or cement composition floor base, or earth. Works flush to walls, curbs, trucks, manholes.**

Striking 1900 blows per minute, each of more than 1250 ft. lbs. impact, the Wayer Impactor produces density greater than a 10-ton roller and in places a roller can't reach. Heated plate cures surface, ready for immediate traffic. Transports on material truck. One man operates. Big cost-savings.

Send for Bulletin 23-9 and name of distributor.



Can work flush to any edge

**WAYER IMPACTOR**

Wayer Impactor, Incorporated, 12 N. Third St., Columbus 15, Ohio

## Newly Improved OK CHAMPION POWER SEWER CLEANER

## DON'T LOSE Sewer Capacity

Clear your sewer lines regularly. Keep up full carrying capacity and you save money—in lower maintenance cost and avoiding costly backwash. Order OK Champion Power Sewer Cleaner equipment and your men remove roots, dirt and other obstructions from any storm or sanitary sewer in ONE operation. All men work above street level.

OK Champion cleaners are regularly clearing sewers all over the world. New improvements make them better than ever. Send for literature.

CHAMPION CORPORATION
Hammond, Indiana

**GET FULL FACTS NOW!**

CHAMPION CORPORATION, 4716 Sheffield Ave., Hammond, Ind.
Please send information on how the Improved OK Champion Power Sewer Cleaner cuts sewer cleaning costs.

NAME.....TITLE.....

ADDRESS.....

## *This Little TOSSIT Capsule Kills Mosquitoes at the * Source*

*Ditches, catch basins, canals, rain pools or large swamps.

No equipment needed. Toss a Tossit in water for complete kill of malaria and pest mosquitoes.

CHEAPER - FASTER
Than Ordinary Spraying

Inspectors! Kill mosquitoes on the spot.

**$30.50**
**Per Carton of 1,000 Tossits**

*Special Prices to Health Depts., Cities, Counties, States.*

Packed in plastic bags — 50 per bag; 5 bags to tin pail. 4 tins per carton.

*Address Inquiries to:*

**SOUTHERN ENTOMOLOGICAL CO.**
**2400 Tamarind Avenue, W. Palm Beach, Fla.**

## THE MUNICIPAL INDEX

**Saves your catalog from the wastebasket. Reaches the buyer when he's buying.**

Approximately 16,000 city and town officials and private water company superintendents who receive the annual Municipal Index use it regularly as a buying guide.

## THE MUNICIPAL INDEX

**470 Fourth Avenue** **New York 16, N. Y.**

# A Dresser-coupled steel line delivers water cheaper...

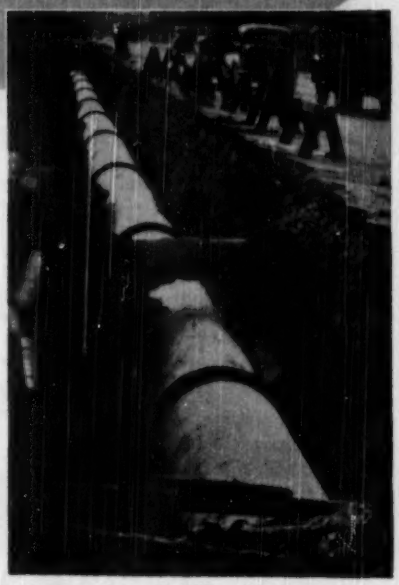
The cheapest way to deliver water to the place where it turns into revenue is with a Dresser-Coupled steel line—the line that

- **Cuts Installation Costs**
- **Cuts Leakage Losses**
- **Cuts Maintenance Costs**

New water lines rarely follow the line of least resistance. In city streets, numerous other utility lines, often uncharted, must be circumvented with a minimum of interference. Ditches must be kept narrow and be closed up rapidly. Pipe and joints must be vibration-proof.

The longer lengths of lightweight steel pipe and easy-to-install, flexible Dresser Couplings pay off in faster job completion, elimination of many costly specials and a generally more satisfactory job. Joining crews are small, need have no special skills. Construction can proceed in any weather. Joints are 100% tight—made to last. Glass-smooth linings assure high sustained carrying capacity.

See your Dresser Engineer or write today for literature.



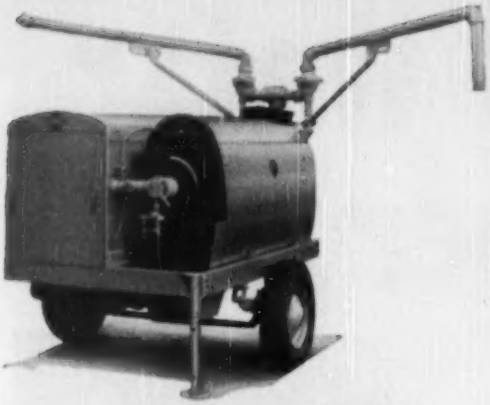
**In Somerville, Mass., this 36" steel line circumvented many electric conduits, water, sewer and gas pipes. Dresser Couplings made it possible to do this with little disturbance to existing structures.**

*BE SURE* you get the best line at the best price. Put steel pipe and Dresser Couplings in your specifications.

# DRESSER "FLEXIBLE-TIGHT" COUPLINGS

Dresser Manufacturing Division, 59 Fisher Avenue, Bradford, Pa. (One of the Dresser Industries). In Texas: 1121 Rothwell Street, Houston. In Canada: 629 Adelaide St., West, Toronto, Ontario. Sales Offices: New York, Chicago, Houston, Philadelphia, San Francisco.

# Heat Asphalt Materials Faster!



## BROS BITUMINOUS CIRCULATOR AND HEATER

● Attractive . . . streamlined . . . compact . . . the *Bros* Circulator has no equal for rapid temperature boosting of asphalts, tars, oils and water. It also does double duty as a high speed, high capacity pumping unit for the transfer of material. Power unit is a 95 H.P. Ford V-8 engine . . . parts and service available everywhere. Low center of gravity and proper weight distribution permit safe trailing at fast speeds. Pays its way wherever it works.

**AVAILABLE IN SEMI-TRAILER MODEL OR STATIONARY SKID TYPE**

Semi-trailer model is mounted on heavy duty leaf springs, Timken bearing axle and heavy duty truck type balloon tires. Adjustable stiff legs hold circulator in position while operating. Skid type circulator is designed for truck mounting or stationary installation in semi-permanent locations.

***The Bros Circulator—fastest heating and pumping unit on the market.***

**BROS**

WM. BROS BOILER & MANUFACTURING CO.
Minneapolis 14, Minnesota

# GET THOSE WEED ROOTS!

GO TO THE ROOT OF YOUR WEED PROBLEM WITH THESE DOLGE PRODUCTS

## DOLGE SS WEED-KILLER

Where no vegetation whatever is desired. Penetrates deep down to plant roots and kills. Sterilizes the soil, preventing normal sprouting of wind-blown seeds. Weeding the thorough, modern chemical way eliminates backbreaking toil and saves the cost of many labor-hours.

## E.W.T. SELECTIVE WEED-KILLER (2-4-D)

Highly recommended for maintaining beauty of lawn and fairway. Works its way down into the roots of brush, dandelion, plantain, poison ivy, ragweed, sumac and other obnoxious plants, but does not injure most turf grasses.

**Please write for descriptive literature explaining how these tested DOLGE products can best be used for your weeding requirements.**

**The C. B. DOLGE CO.**
WESTPORT, CONNECTICUT

# Get your FREE COPY now!

*It tells you how to make money, too. Make sure you get yours. Mail the coupon today.*

**HENRY DISSTON & SONS, INC.**

665 Tacony, Philadelphia 35, Pa., U.S.A.

*In Canada, write:* 2-20 Fraser Ave., Toronto 3, Ont.

**This BIG 36-page book is packed full of pictures and profitable tips about cutting timber and cutting costs**

Henry Disston & Sons, Inc. (Adv. Dept.)
665 Tacony, Philadelphia 35, Pa., U.S.A.

Gentlemen:
I would like very much to have a free copy of your book "How To Cut Costs and Make Money with Chain Saws."

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Company_____

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City_____ State_____

My occupation is_____

# CHECK THESE FACTS ON DORR CLARIFIER PERFORMANCE!

**OPERATING DATA DORR SIFEED CLARIFIERS—RADIAL FLOW—ROUND OR SQUARE**

| Location | Yrs. | Data Period | Ave. Flow MGD | Clarifiers No. | Clarifiers Size | Clarifiers W.D. | Det. Hrs. | O'Flow Gal. | Susp. Solids Raw | Susp. Solids Eff. | Susp. Solids % Rem. | Sludge % Sol. | Sludge % Vol | B.O.D. Raw | B.O.D. Eff. | B.O.D. % Rem. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Washington, Blue Plains Plt. | 2 | 1944-45 | 136.3 | 12 | 186' Dia. | 14 | 1.88 | 1350 | 163 | 63 | 48 | 6.85 | 67.5 | 173 | 120 | 30.5 |
| Gary, Ind. | 4 | 1941-44 | 20.11 | 4 | 75' Sq. | 10 | 2.0 | 980 | 265 | 104 | 61 | 5.32 | 63 | 148 | 72 | 47.2 |
| Winnipeg, Man. | 2 | 1943-44 | 22.8 | 2 | 115' Dia. | 12 | 1.98 | 1100 | 348 | 150 | 55 | 8.0 | 70.5 | 310 | 231 | 25.5 |
| Battle Creek, Mich. | 5 | 1938-42 | 4.92 | 2 | 80' Dia. | 10 | 3.66 | 490 | 282 | 85 | 70 | 5.5 | 62.5 | 264 | 174 | 34.1 |
| Buffalo, N. Y. | 3 | 1939-41 | 135 | 4 | 160' " | 15 | 1.8 | 1800 | 298 | 114 | 46 | 5.77 | 50 | 138 | 107 | 22.5 |
| Albuquerque, N. M. | 7 | 1939-46 | 5 | 1 | 80' " | 12.2 | 2.71 | 985 | 254 | 91 | 61 | 3.99 | 61 | 282 | 158 | 44.5 |
| Yakima, Wash. | 1 | 1942 | 9.5 | 4 | 99' " | 9 | 4.32 | 373 | 110 | 23 | 74 | 8.99 | 74.4 | 175 | 92 | 50 |
| Appleton, Wis. | 7 | 1938-45 | 4.8 | 2 | 79' " | 10 | 2.98 | 823 | 278 | 63 | 77 | 5.8 | 58 | 284 | 141 | 50 |
| Baltimore, Md. | 4 | 1939-44 | 69.5 | 3 | 178' " | 12 | 1.84 | 1360 | 214 | 83 | 61 | 3.8 | 62.7 | 281 | 204 | 27.5 |
| Springfield, Ohio | 4 | 1937-40 | 14.8 | 2 | 80' " | 10 | 1.55 | 1160 | 186 | 63 | 62 | — | — | 98 | 43 | 52 |
| Mansfield, Ohio | 2 | 1944-45 | 3 | 1 | 65' " | 12 | 2.38 | 985 | 208 | 87 | 58 | 4.2 | 70 | 227 | 138 | 38.8 |
| Cedar Rapids, Ia. | 9 | 1936-44 | 4.21 | 1 | 70' " | 11.5 | 1.95 | 1060 | 354 | 132 | 63 | 5.5 | 61.2 | 383 | 291 | 24 |
| Austin, Texas | 2 | 1944-45 | 5.84 | 1 | 75' " | 12 | 1.89 | 1275 | 263 | 95 | 64 | 4.8 | 63 | 285 | 152 | 46.3 |
| Neenah-Menasha, Wis. | 4 | 1942-45 | 7.93 | 2 | 75' " | 10 | 1.8 | 1780 | 661 | 188 | 72 | — | — | — | — | — |
| Denver, Colo. | 5 | 1939-43 | 48 | 4 | 140' " | 9.7 | 2.34 | 750 | 167 | 44 | 77 | 5.4 | 70 | 212 | 100 | 48 |
| Sheboygan, Wis. | 1 | 1944 | 6.4 | 2 | 80' " | 10 | 2.8 | 935 | 342 | 98 | 62 | 7.2 | 61.1 | 513 | 285 | 44 |
| Ypsilanti, Mich. | 3 | 1943-45 | 1.86 | 2 | 40' " | 9 | 2.5 | 860 | 226 | 87 | 62 | 8.2 | 71.4 | 141 | 95 | 33 |
| Monroe, Mich. | 8 | 1939-46 | 4.3 | 2 | 85' " | 7.5 | 3.55 | 370 | 329 | 75 | 77 | 5.23 | 67.7 | 135 | 73 | 46 |

A few moments study of these figures will give you a clear idea of what kind of performance you can expect Dorr Clarifiers to deliver.

These are long-term records... obtained by competent plant chemists at well established installations. We believe they cannot be bettered.

Performance is one of the primary factors upon which Clarifier excellence should be judged. Are you getting the best?

Close-up of peripheral overflow from one of four 160' dia. Dorr Sifeed Clarifiers at Buffalo, N. Y.

*We'd like to give you some figures on Dorr Clarifier repair costs too. Ask a Dorr engineer for the facts.*

DORRCO

**THE DORR COMPANY, ENGINEERS**
BARRY PLACE, STAMFORD, CONN.
NEW YORK • ATLANTA • TORONTO
CHICAGO • DENVER • LOS ANGELES
**RESEARCH AND TESTING LABORATORIES**
WESTPORT, CONN.
**SUGAR PROCESSING**
PETREE & DORR DIVISION, STAMFORD, CONN.
**ASSOCIATES AND REPRESENTATIVES**
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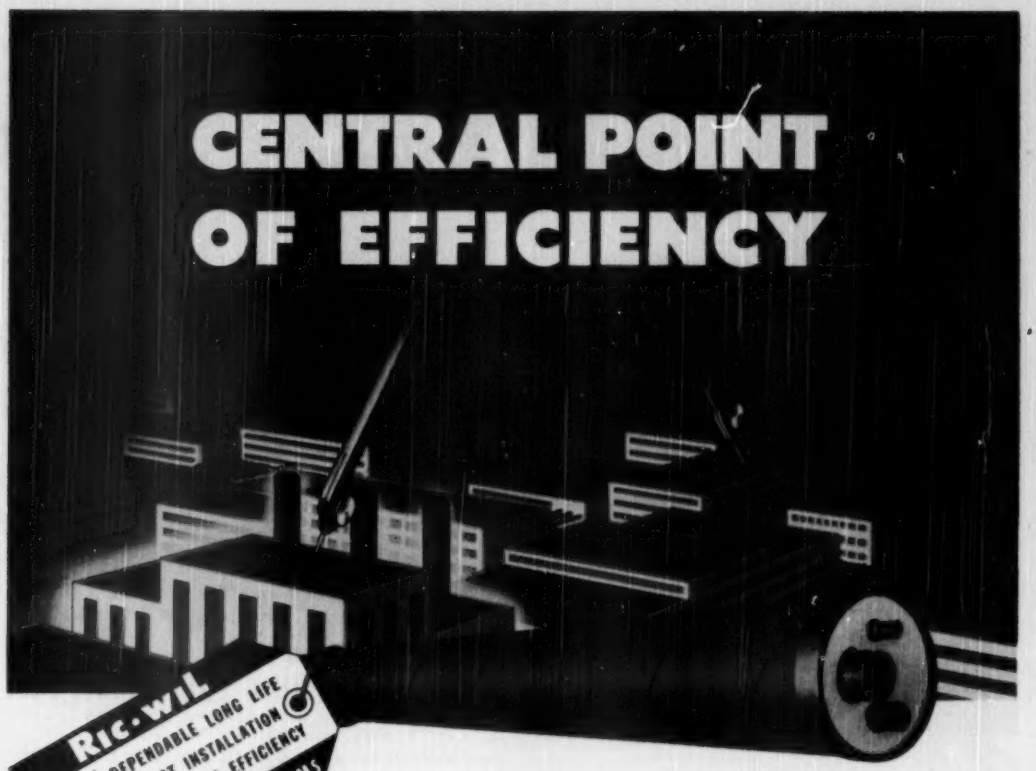
DORR
RESEARCH ENGINEERING EQUIPMENT

# CENTRAL POINT OF EFFICIENCY

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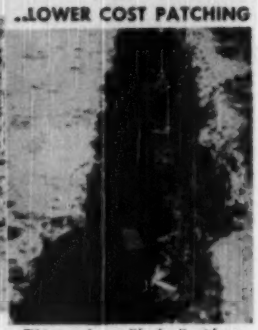

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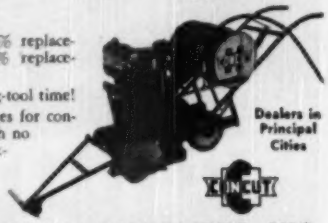

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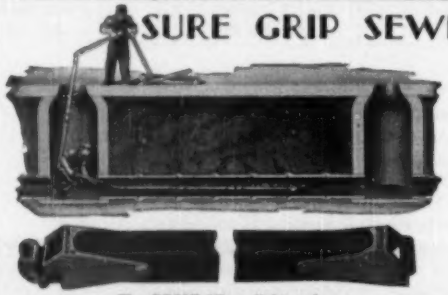

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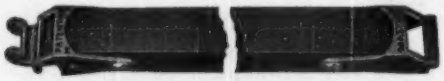

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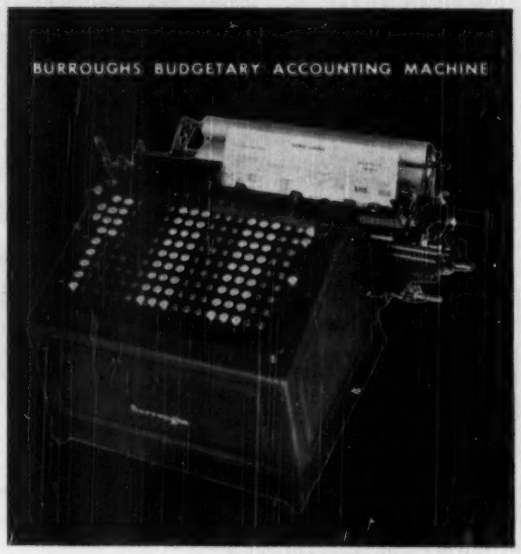


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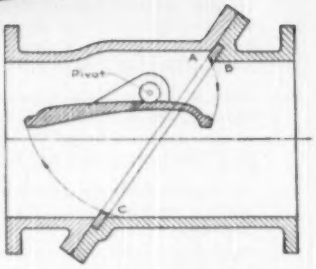


Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

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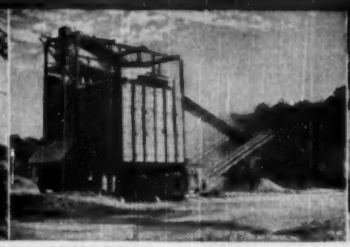

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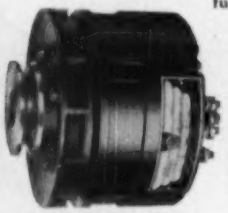

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Traffic stresses, earth settlement and chemical attack are all minimized by K&M Asbestos-Cement Pipe — the main that the years don't weaken! As a final economy this pipe is recoverable for re-laying in its original pressure class. You can see why the savings made and the service assured always do credit to those responsible for K&M "Century" Pipe installations. Write us for full data.

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# HOW WATER METERS *Save Water*

HERE are just a few examples of the actual water savings effected by meters in all types of towns and cities. These savings represent correction of leakage, careless waste or unauthorized use. In no case do they mean reducing the legitimate use of water. These figures speak for themselves—yet they only begin to tell the story.

For complete factual data, call on your Trident Representative.

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### HARTFORD, CONN.

18% metered – Per capita consumption 130 gpd. Pop. 960,000.
100% metered – Per capita consumption 91 gpd. Pop. 1,440,000.

### DALLAS, TEXAS

Unmetered – Per capita consumption 100 gpd.
Metered – Per capita consumption 60 gpd.

### LOS ANGELES, CAL.

10% metered – Per capita consumption 350 gpd.
100% metered – Per capita consumption 116 gpd.

### DANVERS, MASS.

Metering cut consumption 16%, postponed $250,000 expenditure for additional water supply.

### PATERSON, N. J.

Unmetered – Per capita consumption 147 gpd. Pop. 126,000.
Metered – Per capita consumption 63 gpd. Pop. 135,000.

### ROCHESTER, N. Y.

100% metering "reduced careless consumption so that no acute shortage occurred."

***The figures above are quoted from a booklet published by us in 1938. The story they tell applies just as strongly today, as evidenced by the example below:***

### NAUGATUCK, CONN.

**TROUBLE** – Consumption increase from 700 million to 1 billion 100 million gallons threatened water shortage.

**REMEDY** – Universal metering with **Trident Water Meters.**

**RESULTS** – Saving on domestic consumption (first year) approximately 60%. Universal Trident Metering revealed unaccounted for (wasted) water amounted to 25%, helped to reduce it to 14%, the overall saving making available additional 1 mgd, worth $29,200 per year. Investment in metering – $35,000; increased storage facilities for equivalent additional water supply would have cost many times that.

## METERING ALONE IS NOT ENOUGH...

*"It must not be taken for granted,"* writes a prominent Water Works General Superintendent and Chief Engineer, *"that with the installation of meters all troubles come to an end. Meters must be properly maintained ... Many a water company has become careless in meter maintenance, and as meter efficiency decreased, has looked to increased rates ... A properly maintained meter department is the most important part of any water system."* Trident Meters, simple, and rugged, with 100% interchangeability of parts, are easy and economical to maintain, at "new meter accuracy" through years of constant service.

**TRIDENT WATER METER**

# What Communities Can Do To Create More Jobs

By ROBERT C. GOODWIN
*Director, Bureau of Employment Security*
*United States Department of Labor*

**While emphasis is being placed on expanding job opportunities in areas of heaviest unemployment, the Bureau of Employment Security is encouraging the establishment of community employment committees in all areas. Resourceful officials and civic leaders have important responsibilities in this field. Prompt action to prevent unemployment before it develops is essential. Nearly every community can take some action to increase and stabilize employment. Each new job creates additional employment in production or services. If every community takes the necessary action to create enough new jobs to assure full employment locally, the result will be a healthier economy and a stronger nation.**

**R. C. G.**

SINCE the last war this country has been facing the paradox of high-level national employment and serious unemployment in numerous scattered local labor-market areas.

This is due in part to the fact that some local-market areas have become economically unbalanced as a result of post-war adjustments or because of long-term depletion or obsolescence of resources and facilities. Reports show that the employment outlook has improved nationally in recent months, but in May there were still more than 40 communities which had unemployment of 12% or more.

If we are to maintain high levels of stable employment—if we are to provide equal employment opportunities—it is obvious that more job opportunities must be found in the areas of heavy unemployment. We must find more jobs for young high-school and college students as they come into the labor market, and we must find ways of employing the unemployed.

This raises the question: What can communities do themselves to stimulate the local economy and provide additional job opportunities?

Communities which have high unemployment are weak links in our economy and constitute threats to our system of free enterprise. Recognizing this fact, the Labor Department's Bureau of Employment Security in the summer of 1949 directed the attention of all state employment-security agencies to the desirability of stimulating community planning to combat unemployment.

On October 17, the Secretary of Labor appealed to the governors of all states to establish state full-employment committees to foster similar community committees. Approximately one-third of the governors have now set up such committees. Local committees have now been established in many communities.

## Local Employment Office Can Help

To a very large extent, the committees which are now functioning rely for their basic information on the data supplied to them by the state employment-security agencies and their local state employment-service offices. The operations of the local employment-service office constitute one of the most sensitive indicators of economic conditions in a community. Through its activities in recruiting and placing workers in response to employers' job orders, taking unemployment-insurance claims, counseling workers, and gathering labor-market and occupational information, the local employment office keeps in constant and close touch with the economic life of the community. It is, therefore, in a position to supply employment-program committees and local-government officials with much of the information they need to keep abreast of economic developments and to plan for sound business expansion.

In addition to figures on the total number of workers seeking jobs, the number filing unemployment-insurance claims, and the prospective labor demands of major employers, local employment-office operating statistics yield a wealth of significant details needed in community planning. For example, the local office can supply information concerning the characteristics of the unemployed—what occupational skills they possess, how many are men, how many are women, and in what age groups they fall. If employers find it hard to fill some of their jobs, the employment service knows in what occupations labor shortages exist, and the size of the unfilled demand.

## Municipal Initiative Needed

The actual organization of community-employment committees is a local matter in which the municipal officials should take the initiative. It is important that these committees embrace all interested community groups—management, labor, civic interests, and local government.

The first activity for the community committee is to make a survey of local resources—plant facilities and other physical assets, and the kinds of workers available. The next step is to plan ways and means to make use of both physical assets and available labor resources.

A community does not necessarily

have to be faced with a critical unemployment situation before taking action. Economic conditions are constantly undergoing change, and what may be a "tight" labor market currently may later develop into an area of considerable unemployment. Furthermore, a community committee can be of service even in an area of full employment, as an expanding economy is required if it is to absorb high-school and college graduates as well as the currently unemployed into the labor force.

Although local committees may not be able to solve all their community employment and unemployment problems, they can do much if local municipal officials, management and labor, and leading citizen groups plan together for business expansion, diversification of production, and better utilization of the total available labor force.

Activities of community-employment committees already established have included many phases of economic development. Some of these activities involve the expansion of existing industry, the attracting of new industry, financial assistance to industry, marketing aids, public works, vocational training and retraining, relocation and placement of workers, and the securing of governmental contracts.

Community committees operating during recent months have found that nearly every program undertaken by them has a direct or indirect impact on the responsibilities of local government. They also have learned that the local committee and the local government each need a great deal of information about the community. They need facts about its workers, its trade and industry, employment trends, and basic resources. These facts are needed before any definite solution to problems adversely affecting the local economy can be satisfactorily worked out. It is in these areas that the local offices of state employment services can be of great assistance.

Municipal authorities will be interested in knowing about some of the accomplishments of community committees already established. Here are a few:

- In one community, the full-employment committee assisted in the establishment of three new industries in one vacant plant, providing employment for about 500 workers.
- A community committee in the Middle West raised a revolving fund to assist in the financing of plant facilities and new buildings. As a result, two new plants have been assured.
- In the rural areas of one state, a small group of manufacturers have pooled their resources and hired a marketing specialist to promote sales of their products.
- In another area, a local housing authority was established and an initial loan of $60,000 was obtained from the Public Housing Administration for a low-rent housing program.
- A committee in still another area made a study of the local vocational-training program and recommended changes so that unfilled local jobs could be filled with qualified applicants.
- A state committee learned that an industrial plant was about to be moved to another state. Satisfactory arrangements were made for the plant to remain within its home state but in another location.
- A Western state committee has promoted county economic clinics in a state-wide effort to promote employment. Ten projects involving establishment of various community enterprises are under way as a result of community action. They include a $250,000 housing project.
- The employment committee in one community got a basket factory started, using local wood and local labor to make baskets for local fruit growers more economically than they could be purchased in other markets.
- In an Eastern city, a local committee helped to find a way to keep a local plant in business producing plastics.
- In a Southern city a community committee found ways to process shale from the surrounding country into a new lightweight building block and established a plant for its production.

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EDITOR'S NOTE: For previous articles in THE AMERICAN CITY on the local officials' role in community employment planning, see "For the Community That Wants More Payrolls," by Richardson Wood, January 1948; and "Tomorrow's Challenge to Community Leaders Today," by Martin C. Wright, April 1948.

# The Late Clarence A. Dykstra on The Future of American Cities

Clarence A. Dykstra

AS A fitting tribute to one of its long-time friends, Clarence A. Dykstra,* who died of a heart attack on May 6 after helping to fight a grass fire, THE AMERICAN CITY reprints the following paragraphs from a paper by him, as City Manager of Cincinnati, on "The Future of American Cities," published in the October 1934 issue of this magazine:

Whether we like it or not, the national economy of the future will be controlled from urban centers and by urban conditions. Urbanism will dominate the future. Since we cannot recapture the pre-machine age, your obligation is to make the machine age safe for the future city. Planning on a large scale, with technology as a basis, furnishes our hope. We must stand fast in the presence of the machine and explore its significance.

In our dreams the city of the future is something beautiful, with a plan of growth and a contented and happy people. It is a balanced structure full of opportunities for work and play. . . . The machine has become the servant and not the master of men. It is a civilization that we are creating, a harmony of the necessary and the good things of life.

So let us have a comprehensive plan and a pattern to work to. Let us reconstruct our slums and rehabilitate our blighted areas. Let us organize for civic achievement as we have been doing for business and industry. Let us measure our city not by size or by numbers, but by its results in terms of human beings who stay young, who have a zest in life, who are gay and spontaneous. We may even recreate a public life of fetes and ceremonies when the city becomes a source of pride to all of its inhabitants. In any event we have the materials out of which to build cities of glory and grandeur. We need only the conception and a new attitude toward our problem.

* Born in Cleveland in 1883, Clarence Addison Dykstra became Professor of Political Science at the University of Kansas at the age of 26. In 1918 he accepted the executive secretaryship of the Cleveland (Ohio) Civic League. This was followed by similar civic service in Chicago and Los Angeles. In 1923 he was appointed Commissioner of the Department of Water and Power of Los Angeles. From 1930 to 1937 he served as City Manager of Cincinnati. This municipal service was followed by eight years as President of the University of Wisconsin and by five years, up to the time of death, as Provost of the Southern Branch of the University of California.

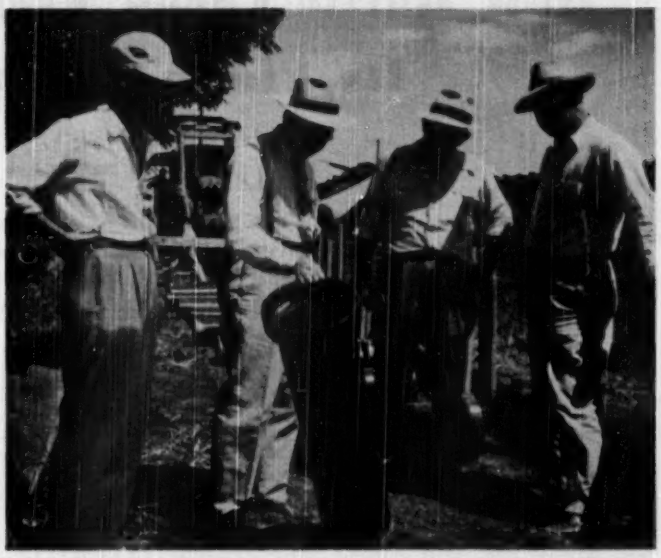
# Wichita Sewer Extensions

TWO sewer-extension projects represent part of the work that Wichita completed last summer to care for its growing population. To serve one area, an 8-inch sanitary sewer had to be laid through one hillside area to a depth of 16 feet. To make sure that the sewer would be in to stay and give long life under any sewerage situation, City Engineer L. K. White called for vitrified clay pipe. The pipe that the contractor is using is a product of the Dickey Clay Manufacturing Co., cast by mechanical process in a new plant at Pittsburg, Kans.

In another area, Mr. White is using a 36-inch Lock Joint pipe to carry away storm water. When the pipe passes under streets or other paved areas, he backfills the trench with sand and flushes with water to prevent settlement.

In both cases the contractor excavated his ditch with a Parsons Trenchliner, and in the storm-sewer project he backfilled the trench with a Caterpillar tractor using a Traxcavator bucket.

The sewer-extension program is under the general supervision of Eugene N. Smith, Director of Public Service, and under the immediate direction of City Engineer White.



**Principals in the sanitary-sewer work examine the heavy-duty clay pipe going into the improvement. Left to right are J. F. Kringler, Resident Engineer for the city; L. K. White, City Engineer; Lyle Stamp, manager for W. B. Carter, contractor; and George France, Field Superintendent.**

**A Parsons Trenchliner digs out for the 36-inch Lock Joint storm drain. Workmen place the sewer pipe close behind the excavated trench to permit immediate backfilling.**

**Concrete pavement will go over this portion of the storm drain, so the Traxcavator backfills the trench with sand, which is flushed with water to insure good settlement.**

# How Battle Creek Escaped Its Financial Strait-jacket

By WILLIAM V. BAILEY
*Mayor*
*Battle Creek, Mich.*

**Repeal of obsolete tax limitation makes possible new water, sewer, street improvements. A municipal survey charts way**

IN THE spring of 1947 the City of Battle Creek, like many of the cities throughout our land, found itself in a deplorable state. The streets were in such bad repair that they were ripping the tires from citizen's automobiles. Sewers were being constructed at the rate of 2,500 feet per year and there were forty-five miles, or 90 years of work, ahead. The auxiliary source of water had not worked for several years. Demand for water in the summer months greatly exceeded supply. Pumps were antiquated and inefficient. The city had virtually no equipment to carry on its many public works. The parks, in many cases, were over-grown. Each department was operating as a semi-autonomy.

Examination proved that there was a substantial lack of knowledge of the problems facing the city, of the facts in regard to the various problems, and of the resources available to the city which, if properly used, would provide the solution to the difficulties. There was clearly a need for an over-all and independent analysis of the problems. Likewise, it was obvious to those in the responsible elective positions that no one man or group of men could possibly find time to gather all of the facts, even assuming that they had the experience and broad background necessary if a first-class job was to be done.

### Survey Shows Needs

As a result, the City of Battle Creek decided to employ Griffenhagen and Associates to make such an independent analysis of the administration of the government of our city. The cost of the survey was paid almost entirely by W. K. Kellogg, founder of the Kellogg Company, the world's largest producer of dry cereals. This vital help was particularly timely because the conditions previously mentioned had placed the city in a position where it had little cash to spare, even for such an important study.

Thereafter, the firm of Griffenhagen and Associates sent in numerous capable and experienced analysts who spent a total of approximately eight months examining the City's administrative structure. The combined reports covering the many departments and their interrelations were published, for public distribution, in May 1948.

Copies of this study were sent to the foremost civic, labor, industrial, and economic leaders of our community. A public announcement was made that free copies were available at the City Clerk's office. In addition, the *Enquirer* and *News* published a series of stories in substantial detail pointing out the problems, the facts, and the suggestions made for the improvement of our city affairs. And, finally, a mass meeting was held in the W. K. Kellogg Auditorium, attended by almost 3,000 residents, who had the opportunity to hear the findings relative to the various city departments discussed and explained by the several analysts who made the study.

During the months when the study was under way, any suggestions which were of obvious importance were carried out insofar as that was financially possible. Upon completion of the study and the report to the citizens, the City Commission immediately attacked the problem of determining which of the recommendations were of foremost importance and should and could be carried out immediately.

### Special Election

Thereafter, the Commission called a special election and placed upon the ballot a proposal to remove the city from the 15-mill limitation and to substitute therefor a 10-mill limitation for city purposes. The effect of this amendment to our charter was to enable the city to levy additional taxes of approximately $300,000 per year, and, at the same time, to leave available, for school

**New surfacing puts run-down streets in top-flight condition. Above is a Barber-Greene paver laying the surface and a Galion tandem roller compacting it.**

and county financing, a broader field up to 15 mills, combined total. During the 60 days intervening between the time the proposal was placed on the ballot and the special election was held, the newspaper continued to write articles based upon the Griffenhagen report and to point out the city's needs. Public discussion inevitably followed.

The result was a broad public understanding of the difficulties with which the city government was faced, and a comprehension of what must be done to arrive at satisfactory solutions. The election results completely vindicated the faith which the Commission had had in the analytical approach to its problems and difficulties. By an overwhelming majority, the people removed the city from its financial straitjacket.

Beginning in July 1948, our problems were attacked along a broad front. While administrative changes were being put into effect, payroll deficiencies were corrected in large measure by payroll adjustments involving a total dollar increase of $92,000 annually. At the same time, a payroll classification and compensation plan was installed, and a personnel department established.

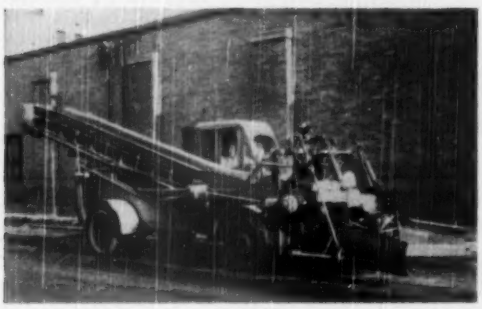
By December 31, 1949, 49 miles of streets had been resurfaced. Approximately $364,327 was spent in carrying out this task. In addition, 3 miles of new streets were developed and construction was commenced on an additional mile.

A sound approach to the sewer problems was reached. Financing to the extent of $400,000 was arranged, equipment was acquired, contracts were let,

## Some of Battle Creek's New Equipment

A Hough loader on a Case tractor can handle many tasks.

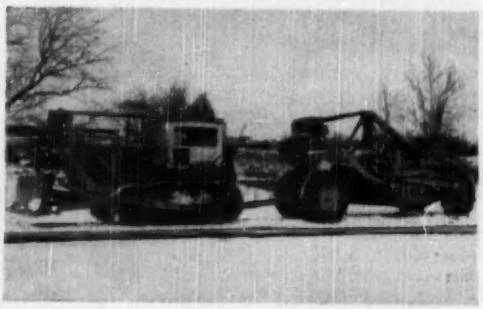
An Austin-Western grader improves general street work.



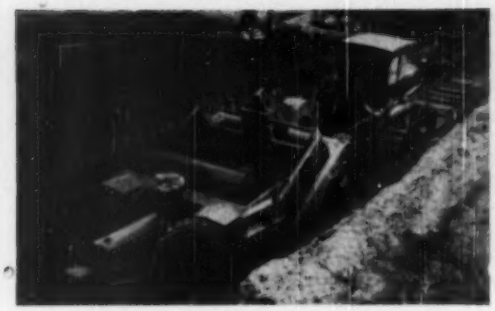
An Athey loader will speed the snow-clearing program.

A Bay City 1¼-yard power shovel is used in the gravel pit.

A 1½-yard Link-Belt crane unloads pipe handily at the water-works yard and transfers it to a truck-trailer.



This Caterpillar tractor with a LeTourneau bulldozer and Carryall takes care of heavy city grading and snow work.



**The improvement program required many new sewers. This is a large one a Caterpillar scraper is digging out.**

**Where the ground-water table was high, a Moretrench well-point system was used to make excavation possible.**

crews were trained, and by December 31, 1949, almost 10 miles of sanitary sewer (including many large trunk lines) were laid. By 1960, Battle Creek will have 45 miles of new sewers and will be completely sewered. By that time, the bonds will all be retired.

### New Wells and Pumps

The water problem was attacked along similar lines. Well and pumping capacity was increased from 21 mgd to 27 mgd. This meant three new wells, drilled by Layne-Northern Co.; three new Pomona pumps, and two Peerless pumps. An auxiliary source of power was installed, pumps were completely overhauled, the electrical system was modernized, and many other vital improvements were completed. At the same time, the city completed plans and financing and began construction on a program for building new reservoirs, installing feeder mains, cleaning old mains, providing proper protection for plants, modernizing meters, and conducting a leakage survey costing $1,150,000. By the end of 1950, this program will be largely completed.

Eighty-four pieces of new equipment were acquired at a total cost of approximately $221,000.

### New Spirit in City Crews

Improved morale among the men, many of whom had good equipment for the first time, was marked. With the right equipment, good working conditions, and proper compensation, the results were truly outstanding. Today, even in our best-managed industries, there is no group of employees more loyal or more efficient.

Over 10 miles of new curb and gutter were laid, recreation facilities were vastly improved with the creation of a night baseball stadium seating about 8,000, and the erection of a new beach house; a systematic tree-trimming program was started, tree planting was begun on a large scale, and multitudes of smaller projects were completed.

On particular administrative problems, the Commission, having determined their relative importance in rebuilding the administrative structure, requested the consultants to assist in carrying out many of the recommendations. Among these was the establishment of the payroll classification and compensation plan which has, in large measure, eliminated the inequities which previously existed, and has placed personnel matters on a sound and efficient basis.

The firm was also asked to aid in the installation of an inventory system. During the process of their study and the period in which they were installing the system, almost $25,000 worth of scrap was found. This discovery far exceeded the total cost of the survey, including the cost borne by Mr. Kellogg. Today, the city has installed a sound inventory plan and is about to engage in improvements in a central purchasing agency.

### Equipment Center Planned

Plans were drawn for the establishment of an equipment center for the maintenance, servicing, and control of all motorized equipment belonging to the city. Within the next few months this plan should be in complete operation, and the result will be a tremendous saving to the public in the annual cost of equipment and a far more efficient use of the equipment available.

At the request of the City Commission, the consultants also developed a series of management records so that the Commission and the department heads could follow the operations of the several departments with the maximum of understanding and knowledge and a minimum expenditure of time of those elected and appointed officials charged with the over-all responsibility of conducting the government upon an efficient basis.

As a result of the study, the city has a planned, intelligent approach to the improvement of the administration of government in all of its aspects. There is a broader public understanding of the necessity for good government at low cost. There is a general acceptance of the concept that municipal government can be conducted in a business-like fashion, with decisions based upon facts rather than upon emotions.

Another happy result was that, although it was necessary to increase the tax rate to the full 10 mills for one year, progress was so substantial and so immediate that it was possible to lower the tax rate to 9½ mills for the year 1949.

The problems, created in part by depression and war, have in this manner been substantially conquered in Battle Creek. There are problems yet to be solved, but, thanks to the analytical study which was made, we know what those problems are. We know what resources are available to use in the solution of these difficulties, and we have a business-like plan to follow in the days to come, so that, within a relatively short time, the major difficulties will have been eliminated. We look forward to the future with confidence and with the certain knowledge that we are now able to carry out the normal functions of municipal government to a greater extent with increased efficiency and with lower cost in relation to the total services performed.

## *New U. S. Citizens Get Local Welcome*

NEW citizens of Rochester, N. Y., are given special recognition and a welcome to the community at well-organized suppers and entertainments given by the Rochester Chamber of Commerce in their honor. The sixty-ninth such affair was held on April 26.

The suppers are sponsored by the Council for Better Citizenship of the Chamber, in cooperation with the federal, state, county and city governments, the Monroe County American Legion, the Women's Auxiliary of the Monroe County American Legion, and the Otetiana Council of Boy Scouts.

# Truck Shipments Dispatched by Teleregister

NEW YORK'S Union Motor Truck Terminal is the first truck terminal to use the Teleregister method of accounting for incoming-outgoing less-truck-load shipments. The terminal is designed to handle from 1,600 to 2,000 tons a day, but W. F. H. Heckman, Chief of Truck Terminals for the Port of New York Authority, says that any terminal handling 250 tons (about 1,000 shipments averaging 500 pounds each) can use this method.

Anyone haunting a stockbroker's office has seen the Teleregister Corporation's display board in its natural habitat. It is the big board that records the stock prices, the figures changing as the prices vary on the floors of the stock exchanges. The Port of New York Authority staff, after looking over various means of rapid communication, visualized this system applied to the reporting of incoming shipments for routing and interior transmitting to the correct bays for pickup and local delivery.

The terminal provides berths for 144 trucks; 80 for over-the-road units, and 54 for local pickup and delivery trucks. The berths are in bays of two berths each, each bay reached by a door large enough to admit two trucks abreast. Trucks come in from all parts of the country with all kinds of shipments destined for points all over the five boroughs and near-by New Jersey. It is most important that the paper work and checking be handled as fast as possible so that it can be kept ahead of the physical handling and insure prompt delivery.

### Individual But Fast Control of Shipments

A carrier truck backs up at Berth 27. The over-the-road driver checks in at registration section and turns over his manifest and bills. The manifest is in quadruplicate; three copies are sent by pneumatic tube to the routing section for terminal distribution. As the over-the-road truck is unloaded, each individual shipment is placed on a platform flat truck.

Here's where the Teleregister comes in. The platform man dials the Control Room just as anyone would use a dial telephone. He flashes three bits of information to the Teleregister board. First, two digits to show the shipment number; second, three digits to show the flat-truck number; third, a button which registers green or red — green meaning all clear, red meaning that the shipment is not all accounted for or has a damaged package.

The man in the Control Room, facing the Teleregister board, can then act immediately on this information. If there is a red trouble signal he tells the platform man by telephone to send it into a special section for attention. If everything is clear he clears his manifest and other papers, knowing that the shipment is now on its way around the platform to the proper delivery bay.

The Teleregister system is merely a fast way of notifying the man in the control room that everything is clear and moving. The platform man might use the telephone but he would have to hang on the wire until he could get in touch with the clerk in the control room, or else there would have to be a clerk for every telephone. With the Teleregister system the clerk can watch the board, which accumulates the information for him without spoken communication with the platform man.

Other terminals have used loud speakers, but this has the same disadvantage as a telephone, plus the chance that the information may be garbled in transit.

As soon as the control clerk has cleared his manifest from the information on the Teleregister board, he sends his papers along promptly by a pneumatic tube to the sections which set up

(*Continued on page* 167)

PHOTOS COURTESY OF THE PORT OF NEW YORK AUTHORITY

**Signaling to platform-control section information on disposal of each shipment.**

**Operators in control room, routing shipments by means of Teleregister board.**

# Water Rate Adjustment Makes Improvement Possible

By THOBURN F. PETERSON
*Water Works Superintendent*
*Middletown, Ohio*

| Minimum charge | *New Rate* In City | Outside | *Old Rate* In City | Outside |
|---|---|---|---|---|
| Inc. first 1,000 cu. ft. | $2.25 | $3.00 | $1.25 | $1.75 |
| Next 4,000 cu. ft. ea. | 1.50 | 1.65 | 1.00 | 1.00 |
| Next 5,000 cu. ft. ea. | 1.00 | 1.15 | .90 | .90 |
| Next 40,000 cu. ft. ea. | 1.00 | 1.15 | .60 | .80 |
| Next 50,000 cu. ft. ea. | .70 | .80 | .60 | .80 |

FOR the first time since 1913, Middletown has raised its water rates. We have made this increase to finance an over-all improvement program amounting to more than $1,500,000.

From a water-supply standpoint, Middletown has been fortunate for many years. The city uses a well supply that has been adequate to meet our normal increase in use. Construction was completed some 25 years ago, when the dollar bought a lot more than it does today, so that we were then able to get along comfortably on the reserve capacity that the construction made possible.

PHOTO COURTESY MIDDLETOWN JOURNAL

**New pipe is eased into the trench with a Mandt crane.**

But since the end of the war, the demands on our water system had grown so rapidly that we were no longer able to take on additional territory outside our city limits. Although we still had reserve pumping capacity, the arterial main capacity was inadequate and made future expansion impossible.

Therefore, the City Commission made an increase in the water rates effective September 1 of last year. This increase is shown in the table at the left.

## Water Outside City Furnished Under Contract

The water supplied outside the city is furnished under contract with the Butler County Commissioner. When our rates were increased, the County Commissioners increased their rates also.

This increase was made to finance mortgage revenue bonds. We were able to sell $1,500,000 of these bonds to Halsey Stuart of Chicago at a rate averaging approximately 2¼%. The enabling ordinance allows a maximum of $2,000,000 to be issued.

With these bonds, we are adding approximately 11 miles of new mains to our 80½-mile water system. The actual work of laying these mains is now under way in two sections. The first, covering two primary feeder mains, is being completed by Fischel Construction Co., of Columbus, and required 16-inch and larger steel pipe, coated and wrapped, joined by Dresser couplings. The second section, covering short sections of main connecting dead ends in the present system, was awarded to Walton and Voorhies of Upper Sandusky, and will use Universal mechanical joint cast-iron pipe, cement lined.

## Third Contract Awarded

We have a third contract awarded for a new 250,000-gallon elevated tank for our new high-service area. This will give us a new Chicago Bridge and Iron tank which is now being erected.

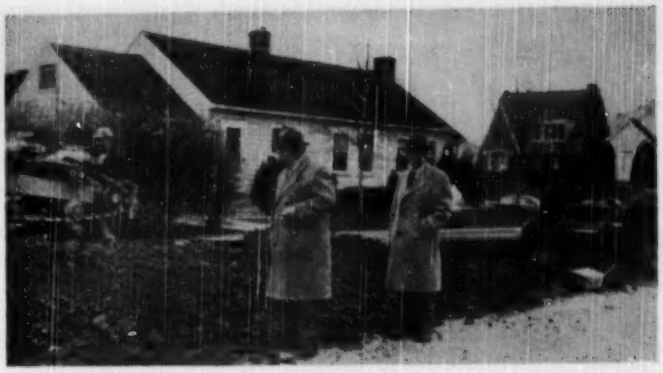
The Layne-Ohio Co. holds our fourth contract for drilling test wells and reconditioning our existing wells. This work is now in progress.

The next contract is our biggest and

most important. It covers the construction of a new 1,500,000-gallon reservoir at our pumping plant; new pumps at our present 4,000,000-gallon reservoir to service the new elevated tank, and two new 5-mgd pumps at the pumping station. There also will be included new power lines servicing the wells and pumping station; a new testing laboratory at the pumping station, and necessary alterations to the pumping station yard piping.

### Less Than Engineer's Estimate

Bids of those contract already awarded have total about $250,000 less than the engineer's estimates. We anticipated that the total cost for all work now projected will be slightly under $1,250,000.



**Left to far right are Mr. Voorhies, of Voorhies and Walton, contractors; Author Peterson; Roy Pochel, City Engineer; W. Shawhan, Streets Superintendent.**

# Cooperation Among Organizations Increases On Local Industrial Zoning and Development

COOPERATION to promote industrial development is the theme of a national campaign which has been launched by the Society of Industrial Realtors. According to the Society, located at 1737 K St., NW, Washington 6, D. C., "The United States has a great number of civic and public service organizations devoted to attracting industry to their communities, and there is a need for a maximum exchange of information on industrial sites and facilities available and on industries interested in expansion."

Considerable attention is also being given to the problem of industrial zoning. Several national organizations have combined to establish a Joint Committee on Industrial Zoning, which has worked out a Statement of Principles upon which all can agree. The principles will be expanded and applicable standards will be established in future meetings of this Joint Committee. The original committee consisted of representatives of the Association of State Planning and Development Agencies, American Railway Development Association, American Institute of Planners, Society of Industrial Realtors, and American Society of Civil Engineers. The American Industrial Development Council, through the leadership of Albert E. Redman, Director of the Industrial Development Department of the Ohio Chamber of Commerce, also adopted the Statement at its meeting on April 4.

The Statement of Principles on Industrial Zoning agreed upon is as follows:

● 1. Most communities require a certain amount of industrial development to produce a sound economy. Except for a limited number of dormitory towns or resort towns, the foregoing general statement will apply.

● 2. Zoning controls are basic tools in the reservation of space for industry, guidance of industrial location into a desirable pattern and provision of related facilities and areas needed for a balanced economy.

● 3. Industrial zoning can be most effective when considered on a metropolitan basis. The zoning plan should extend across corporate limits whether by extra-territorial powers available to the municipalities or by close co-ordination between municipalities or other political divisions.

● 4. Most industries will require larger areas in the future. With a growing population and expanding economy, there will be more opportunity for industry to increase. Many individual plants will require more ground space than heretofore, due to a tendency for new plants to be one-story or fewer stories than in the past; toward setbacks and landscaping; toward employee parking areas, and adequate materials-handling space.*

● 5. Industrial use is a legitimate land use possessing integrity comparable to other classes of land use established under zoning. Thus, we should stop speaking of industrial as a "lower use" and in establishing districts we should extend to all districts an element of protection from encroachment by other types of uses. The protection of good industrial areas from encroachment by residential development is as logical as the protection of residential areas from encroachment by industry.†

● 6. Through proper zoning, industrial and residential areas can be "good neighbors." In designing a good use plan, the planner should relate residential areas to industrial areas with due regard to the transportation of industrial workers.

● 7. (a) Special care should be given to zoning for industrial use suitable areas adjacent to railroad rights of way.

(b) The same care should be given to zoning for industrial-use areas adjacent to waterways and to sources of industrial water supply and appropriate disposal of industrial wastes.

(c) Provision should be made for zoning areas adjacent to airports for potential locations for industries related to air transportation.

(d) Consideration should be given to providing areas zoned industrial to provide sites for industries not requiring rail or water transportation.

● 8. Special consideration should be given to the street layout in industrial zones. Such zones should be provided with a sufficient number of major thoroughfares to handle traffic, postponing the layout of service streets until industrial development takes place.

● 9. In the zoning of land suitable for industrial purposes, and in the planning of new highways, a desirable general principle will be to locate such highways at some distance from railroads to provide (a) industrial property between the highway and railroad, (b) room for grade separations and approaches when necessary, and (c) to permit the use of the adjacent land for industrial purposes without the necessity of putting spur tracks across the highway.

● 10. There is need for a reclassification of industry based on modern manufacturing processes and the prevailing policy of plant construction, so as to determine the desirability or lack of desirability for inclusion in the given area.

● 11. Zoning ordinances should be permissive, rather than prohibitive.

● 12. A good zoning ordinance should be sufficiently definite to convey to a landowner a clear concept of what he can do with his land. The powers of the Zoning Board of Appeals or Adjustment should be clearly stated in the ordinance with definite limitations and standards within which it may make interpretations and authorize exceptions and variations.

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* Instances were given of communities or industries using land ratios as high as ten to one when comparing new or proposed installations with older installations manufacturing the same products.

† Numerous examples were given of badly needed industrial land being ruined or being kept off the market by sale and "improvement" of a tiny percentage of the area as residential property.

# Diesel Engine Economics

This Nordberg dual-fuel engine is a recent installation at Elkhorn, Wis. (See next page for data.)

By H. W. DOW, Jr.
*District Manager*
*Heavy Machinery Division*
*Nordberg Manufacturing Company*
*Milwaukee, Wis.*

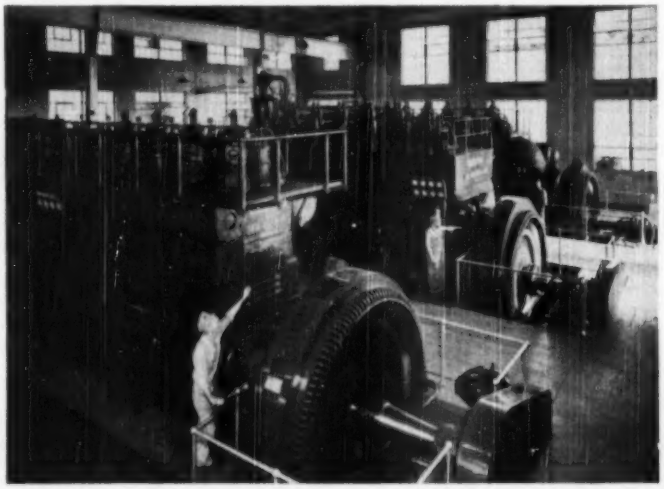
IN THIS hemisphere there are hundreds and perhaps thousands of diesel generating plants owned by municipalities, REA systems, private industries, and private utilities. The great majority range from 1,000 to 10,000 kw in total capacity. Exceptions, however, are now becoming numerous enough to indicate a new trend. During the war a single aluminum plant erected in Arkansas required 18 diesels generating 2,500 kw each, and 50 diesels each generating 825 kw. Of this total capacity, 45,000 kw represents diesels operating on natural gas as fuel. Figures available point to a total for direct operating costs between 2 and 3 mills per kw-hr. Another newer plant in this industry will total 120 to 1,000 kw units burning natural gas as fuel in Texas. This single plant will be by far the largest in the world with 120,000-kw installed capacity.

## Natural-Gas Cost Reductions

Natural gas has become increasingly abundant in more parts of the country. Farther from the gas fields, we find low-priced gas during off-season periods. It is for this latter condition that the dual-fuel diesel was developed. Today, any size of diesel may be obtained equipped with the dual-fuel principles and capable of burning either gas or oil and instantly convertible to either fuel without even dropping load.

A simple rule-of-thumb price check on the desirability of either gas or oil fuel in a diesel engine is to use the factor of 7. Seven times the price per gallon of oil fuel gives the equivalent price per thousand cubic feet of natural gas to produce the same amount of energy. Correspondingly, the price of natural gas per thousand cubic feet divided by seven gives the equivalent price of oil to produce the same amount of energy.

As an example, suppose gas were available at 40 cents per thousand cubic



The engine room of the Greenville, Texas, electric plant. Operating data for this municipal utility are tabulated at the bottom of the next page.

feet and oil was selling at an average price of 8 cents per gallon. Gas would then be equivalent to 40 divided by 7 or 5.7 cents per gallon oil. This would mean an approximate fuel-cost saving of 30%. Considering fuel as 75% of all direct operating costs, this would mean a 22½% reduction in such costs.

Today, with fuel oil and gas prices what they are, a new diesel generating plant could be expected to generate electric power at a cost at the switchboard, including auxiliary power load, of between 6 and 8 mills per kw-hr. Shown here are several typical modern plants in different geographical localities which are realizing this practical goal.

In first cost, the diesel generating plant has always been attractive and can be said to have averaged between $125 /kw to $175/kw, depending on size and facilities necessary. Lately, many steps have been taken to lower this first cost. The diesel industry is endeavoring constantly to increase the rating of a diesel with respect to cubic space occupied. This has recently been accomplished by means of turbo-charging, and both four- and two-cycle diesels, and has followed mechanically the idea of "V" type or radial-type cylinder arrangement. Also larger bore and stroke engines have been developed which lend themselves to greater horsepower ratings in a given space. At present a radial-type diesel of 2,000 bhp can be installed in a space 12 feet square with a 12-foot basement and 8-foot clearance above the engine-room floor level. Foundation requirements consist merely of a 2-foot-thick concrete pad approximately 12 feet by 12 feet in area. Already two of these units are installed in an REA plant in the Middle West.

**Municipal Diesel Generating Plant, Ponca City, Okla.**

| Year | Production Expenses | Kw-hrs. Produced | Cost kw-hr. in Mills |
|---|---|---|---|
| 1937 | $71,445 | 11,017,000 | 6.48 |
| 1938 | 73,604 | 11,247,000 | 6.55 |
| 1939 | 79,295 | 11,656,000 | 6.81 |
| 1940 | 80,746 | 11,955,000 | 6.75 |
| 1941 | 62,674 | 12,224,000 | 5.13 |
| 1942 | 85,651 | 12,449,000 | 6.88 |
| 1943 | 87,310 | 13,099,000 | 6.67 |
| 1944 | 92,705 | 14,637,000 | 6.34 |
| 1945 | 103,582 | 16,778,000 | 6.17 |
| 1946 | 108,611 | 18,528,000 | 5.86 |
| 1947 | 133,005 | 20,649,000 | 6.43 |
| 1948* | 160,567 | 23,179,300 | 6.93 |
| 1949* | 168,567 | 24,476,100 | 6.90 |

* Started to burn natural gas in two of six units.

**Municipal Diesel Generating Plant, Elkhorn, Wis.**

Year 1949

Daily generation ... 14,000 kw-hrs.
Load factor ..... 100% *
Fuel cost (gas and pilot oil) ..... 4.6 mills per kw-hr.
Total generating costs ..... 8.0 mills per kw-hr.

* This is a single engine operating 16 hours per day, 6 days per week, and paralleling a private-utility highline. Savings over purchased sewer are about 4 mills per kw-hr.

**Municipal Diesel Generating Plant, Estherville, Iowa**

| Year | Total Generation | Average Cost Supt. and Labor, Fuel, Lube Oil, Repairs, Supplies | | | Comments |
|---|---|---|---|---|---|
| 1941 | 6,989,900 kw-hrs. | .005996 | Dollars | /kw-hr. | One of first five diesels converted to gas. |
| 1942 | 7,201,500 " | .006885 | " | " | |
| 1943 | 7,348,500 " | .006910 | " | " | |
| 1944 | 8,356,100 " | .006150 | " | " | |
| 1945 | 9,333,800 " | .006430 | " | " | |
| 1946 | 10,708,400 " | .006140 | " | " | New gas diesel installed. |
| 1947 | 13,673,300 " | .006510 | " | " | |
| 1948 | 17,858,400 " | .003304 | " | " | New gas diesel installed. |
| 1949 | 21,168,500 " | .007820 | " | " | New gas diesel installed. |

**Municipal Diesel Generating Plant, Carthage, Mo.**

| Year | 1947 | 1948 | Comments |
|---|---|---|---|
| Total Generation/kw-hrs | 19,076,230 | 20,382,000 | This plant is still |
| Fuel cost in mills/kw-hrs | 3.280 | 5.810 | burning all fuel oil. |
| Lube oil cost in Mills/kw-hrs | .197 | .153 | |
| Maintenance and Repairs in Mills/kw-hrs | .874 | .963 | |
| Superintendent and Labor in mills/kw-hrs | 1.250 | 1.220 | |
| Total direct generating expense in mills/kw-hrs. | 7.38 | 9.95* | |

* It should be noted that 1948 was a year of scarce supply and high prices in the fuel-oil market. Since this time, fuel-oil prices have dropped.

**Municipal Diesel Generating Plant, Greenville, Texas**

| Year | Kw-hrs. Generated | Summary Cost of All Direct Charges, Mills/kw-hr. | Comments |
|---|---|---|---|
| 1935 | 5,300,490 | 4.69 | Oil fuel operation |
| 1936 | 5,681,201 | 5.51 | " " " |
| 1937 | 6,471,750 | 3.88 | " " " |
| 1938 | 6,720,110 | 4.72 | " " " |
| 1939 | 7,820,110 | 4.94 | " " " |
| 1940 | 8,998,040 | 4.60 | " " " |
| 1941 | 9,155,720 | 4.56 | " " " |
| 1942 | 9,607,670 | 4.82 | First gas diesel installed |
| 1943 | 12,210,436 | 4.25 | |
| 1944 | 15,661,959 | 4.11 | |
| 1945 | 15,765,660 | 4.62 | |
| 1946 | 14,406,370 | 5.44 | Second gas diesel installed |
| 1947 | 15,975,964 | 5.31 | |
| 1948 | 18,085,550 | 4.43 | |

## *San Francisco Sewerage Program Is Nearing Completion*

WORK is progressing on the sewage-treatment improvements for the San Francisco Area. Contracts were only recently awarded jointly to the Walsh Construction Company, Bates and Rogers Construction Corporation, and J. H. Pomeroy & Company, Inc., all of San Francisco, for the Southeast sewage-treatment plant for a figure of $2,132,118. The Southeast plant is the final treatment plant required in San Francisco to halt the discharge of raw sewage into San Francisco Bay and the Pacific Ocean. It will serve the southeasterly portion of the city, embracing about a quarter of the city's area.

The recently awarded contract includes the construction of headworks structures, a grit washing building, sedimentation building, sludge control building and chlorination unit, together with an electrical substation and other incidental facilities. Sludge collected at the Southeast plant will be pumped to the North Point sludge treatment plant located on an adjoining site.

The Richmond-Sunset sewage-treatment plant constructed in 1939 was enlarged to ultimate capacity about a year ago. Other sewage treatment contracts now under way are as follows:

North Point sewage-treatment plant
$8,289,525

Influent and effluent sewers for above
$1,039,903

Sludge force main—6 miles long to sludge treatment plant
$388,180

Sludge treatment plant
$4,486,000.

Construction schedules have been arranged to bring about completion of all these units during 1951. The work is under the general direction of Sherman P. Duckel, Director of Public Works, and under the immediate supervision of Ralph G. Wadsworth, City Engineer, and Clyde C. Kennedy, consulting engineer.

## *More Fluoride Use In Wisconsin*

THE number of Wisconsin municipalities using fluoride to treat water supplies as a dental-health measure has jumped from 10 to 16, according to the Wisconsin State Board of Health. These cities include: Antigo, Ashland, Baraboo, Beloit, Edgar, Elkhorn, Fort Atkinson, Hartford, Janesville, Madison, Mukwonago, Oshkosh, Richland Center, Sheboygan, Soldiers' Grove, and Stoughton.

Thirty-one other cities have approved fluoridation of public water supplies and will install equipment in the near future.

# Stamford's "Little Hoover Commission" Produces Survey Without Cost to City

By JOSEPH CHANKO, *Chairman Citizens' Committee to Study the City Government Stamford, Conn.*

CITIZENS and officials are cooperating in Stamford, Conn., in a major effort to increase the efficiency of the city government's operation. A comprehensive management survey has been produced without cost to the city, through the assistance of some of its largest business institutions.

Stamford became a city on April 15, 1949, as the result of a new charter adopted by popular referendum. What had been a town since 1641, and a city for a part of its area since 1893, was consolidated after more than 50 years of the dual form of government. Many existing methods of administration, operation, and financing required revision. New problems were faced at the start of the merged form of government. The new administration, headed by Mayor George T. Barrett, performed its work as well as could be expected under the conditions.

However, the Stamford Good Government Association, an active non-partisan civic organization, after observing the progress of the new government for about six months, offered its services to the Mayor in making a comprehensive study without cost to the city. The following proposals were made:

- 1. That the Mayor name a Citizens' Committee of Five to study and make recommendations on major problems relating to improvements and possible economies in the administration of the consolidated City government.
- 2. That the Committee consist of qualified citizens (five names were proposed by the Association) with a reputation for objectivity and civic-mindedness.
- 3. That all department heads be informed of the purpose and scope of the Committee's work, and that the Committee would have their cooperation.
- 4. That the completed report be submitted to the Mayor.

The Mayor replied, welcoming the suggestion, and appointing the persons proposed for the committee. He named the chairman, and the project was started.

As the committee consisted of busy men who could not possibly find the time to make the necessary detailed studies, several public-spirited industries in Stamford were asked to supply technical and professional personnel to work on the study. Responding in donating the time of the task force were the Electrolux Corporation, Norma-Hoffman Bearings Company, Pitney-Bowes, Inc., Taylor Reed Corporation, Yale and Towne Manufacturing Company, and the Conde Nast Publications, Inc. Another firm, Samuel H. Silberman Inc., provided the use of a suite of offices while the Committee was active.

**THE COMMUNITY owes a debt of gratitude to the people who contributed their time and energy to make this survey possible. The Committee was broad-minded in its attitude, and realized that a municipal government cannot be operated in the same way that industry is managed. Their recommendations were made with the understanding that we would use only the ones we considered helpful, and rule out those we considered impractical.**

**In the long run, we expect wholesome improvement in our government as a result of the Committee's recommendations, but it requires constant vigilance on the part of public officials and will need the cooperation and help of the the public.**

**GEORGE T. BARRETT**
***Mayor***
***Stamford, Conn.***

A task force of 17 engineers, methods men, accountants, and others were assigned the departments to be studied. One, two, or three men constituted a task unit, depending upon the nature of the department, with full authority and cooperation to delve into any administrative or operating detail of the new city government.

A definite procedure was established for making the study, including methods of collecting data and writing reports, to insure uniformity, accuracy, thoroughness, conciseness, and adherence to schedule. Specific items for study in each department were: performance of its proper functions, methods of operation and job analysis, efficiency of layout and personnel, use of labor-saving devices, existence of any overlapping functions, efficiency and adequacy of supervision, comparison of cost with similar departments in other municipalities and with combined cost under former dual government, possible economies, organization charts, and hours and vacations.

Department heads were interviewed, their business blanks or forms were analyzed, the methods and duties of personnel were studied. Based upon all the available material, a report, including recommendations, was submitted to the over-all Committee of Five who studied the report, weighed the facts, and evaluated each. It was frequently necessary to request additional data before a report was considered complete. Then the report, approved by the Committee, was sent with a letter to the Mayor.

Even the publication of the report was done without cost to the city. Two civic-minded organizations in Stamford collaborated to reproduce it in their own plants.

## Findings and Conclusions

The most important *findings* and *conclusions* of the report were that:

- 1. The general structure of the city government is sound.
- 2. Essential checks and balances were provided by the three branches.
- 3. Economies could be achieved in operation amounting to savings of $125,000 or more annually.
- 4. The city's plant and facilities are generally good, but capital improvements are urgently required.
- 5. Several departments had not been properly reorganized.

More than 100 important recommendations were made. Major points emphasized:

- 1. The urgent need for proper working facilities in the City Hall.
- 2. Frequent consultation of the Mayor with a "cabinet" to discuss and expedite improvements and policies.
- 3. A realistic awareness of the needs of Stamford in their proper relation.
- 4. The establishment of a central clerical office to pool the clerical staffs for the several boards that use part-time personnel.

The report stressed the responsibilities of the Mayor and urged that he be given adequate staff and facilities, and also recommended that his salary be raised in recognition of his top-executive role.

The Citizens Committee to Study the

City Government asked that there be a continuing follow-up of the recommendations on the part of all city officials and that a periodic public report should be made by the Mayor to tell the public of the progress being made on the recommendations.

In accepting and acknowledging the comprehensive report, Mayor Barrett thanked the Committee for its excellent civic service, and declared that he intended to implement its recommendations as soon as practicable.

### Action by City Administration

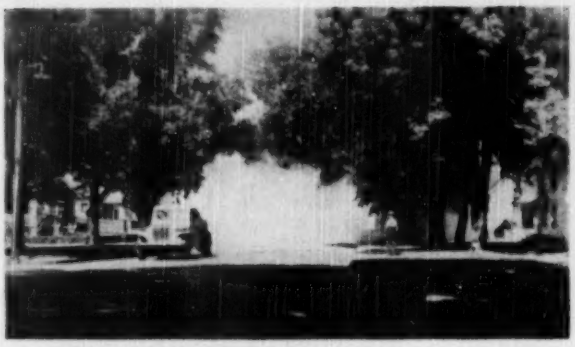
Since the report was released, the following steps have been taken by the city administration in line with the recommendations and proposals:

- 1. Forty hours was established as a uniform work week for office personnel, instead of the former ranges of from 32 to 44 hours.
- 2. Current capital and operating budgets were rearranged in accordance with the recommendations of this Committee, with an emphasis on "performance" and job classification.
- 3. There is now pending before the local legislature a recommendation for a fund of $15,000 to $20,000 to alter the working areas in the City Hall to make a saving of more than $4,000 in rental and to salvage about 5,000 square feet of storage space which is now going to waste.
- 4. Wherever possible, duties and responsibilities have been transferred from one part of a staff, or from one department to another, as recommended by the Committee.
- 5. Self-surveys by heads of all departments have been started to decide whether or not Committee suggestions are possible or practical, and, if found constructive, to try to put them in force.

Though the Mayor is in agreement with most of the recommendations, he has pointed out some of the difficulties involved. These include the reluctance of appropriating bodies to approve structural changes in the Town Hall; possible conflict of some suggestions with requirements of state statutes; the fact that some departments responsible for making changes and improvements are under-staffed, and the pressure of routine business and special events upon the Mayor's own time, which limits at present the amount of time he can spend in "frequent consultation with a cabinet."

An encouraging by-product of the report has been the creation of more widespread public understanding of the magnitude of the job of operating the city. This should pave the way for a continuing program of improvement.

## Fly-War Strategy in Iowa Communities



**A TIFA fogger mounted on a Jeep reduces flies in an Iowa town.**

COMMUNITY-WIDE fly control paid measurable dividends to Iowa cities, as surveys in this state showed last year. Of 906 towns and cities in this state, 297 of them had organized fly-control programs. Of this group, 59 used airplane dusting, 179 used power equipment on the ground, such as the Aero-Mist sprayers, and 59 were sprayed by Tifa foggers.

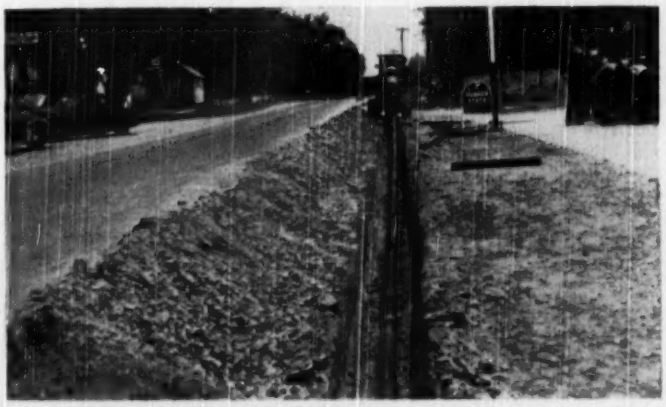
More flies were found in communities without organized control programs than in those where control measures were organized. The number of flies in any community was also closely associated with the town's sanitation system, in particular, its garbage-disposal system.

The greatest number of flies in each town was found in places where poultry was handled—either by dealers in live poultry, or by poultry-raising establishments on the outskirts of town.

The studies were made by John K. Reed, Iowa State College graduate student in entomology. Mr. Reed estimated the number of flies in three different areas of town. In the business district he counted the number of flies on the store fronts on both sides of the street. Elsewhere the estimates were made by using a grid. This grid is 3 feet square and made of ¾-inch slats spaced ¾ inch apart. The grid was placed in a fly-appealing spot, and the number of flies that lit on it in 30 seconds were counted.

GWEN HAWS
*Iowa State College*

## Leitchfield, Ky., Lays New Gas Line



**New pipelines go down fast with the right equipment. Leitchfield found this to be true when it installed over 7,000 feet of new wrought-iron pipe to its municipally owned gas-distribution system and used a Buckeye ditcher to open the trench. The purpose of the improvement was to replace old lines and install a high-pressure system to care for increased customer load. The work was under the direction of T. E. Layman, Superintendent of Water Works.**

# Here Comes General Electric

"The More Power to America Special" rounds a bend on the New York Central track outside of Schenectady, N. Y.

**"MPA" Train will visit 150 of the country's key centers during 1950 and 1951. It merits a rousing reception at every one of them. Its practical inspection by the executives and engineers of local utilities, industries, and governments will reveal products and ideas that should improve the economic status of each community.**

IF ALL the equipment, devices and materials carried by the "More Power to America Special" could be sold at a fair profit 10 times over during its nationwide tour, the United States would be the greater gainer than the General Electric Company. For the purpose of all those products is to expand electrification, which is the ability to produce more goods of all kinds at lower prices. If that is not also the purpose of America, then the triplets of despair—drift, dullness, and a slowing pace—will take over.

This 10-car train is actually a salesman's kit 9½ feet wide by 1,000 feet long. Its samples are 2,000 products and ideas, and the ideas are often as significant as the products, which are all that are required in making, distributing, and using electricity. In fact, it is probably the most gigantic effort at individual-company salesmanship that has yet been exerted.

The train itself is the last word, from the 4,500-hp two-unit Alco-GE diesel-electric locomotive to the 10 stainless-steel coaches. Each car features equipment use, beginning with power generation and distribution and continuing through drives, heating, welding, lighting, measurement, and civic improvement.

Pointing up the tremendous increase in turbine efficiency since 1900, a wall display charts the drop in the amount of fuel required to produce one kilowatt-hour of electricity from 6.6 pounds in 1900 to only 1.3 today.

To dramatize the replacement of muscle-power by electric power, another exhibit features a hand-crank generator with which a strong man, working all day, can produce power at the rate of only 40 watts. The exhibit shows that the generation of one kw-hr. of electricity by muscle power would require the combined work of 13 men for one hour. It emphasizes also that the average U.S. industrial worker today has 5,500 watts helping him—a basic reason for this country's high productivity.

How power companies can maintain a continuing check, by means of a supervisory control system, on miles of transmission lines and numerous substations, is shown in another operating exhibit. Push-buttons enable visitors to cause "faults" in a system schematically depicted on a frosted-glass panel. These "faults," and their location, are indicated instantly on the panels of two small supervisory-control and protective relaying units especially designed for use on the train.

A power-transformer exhibit shows how forced-oil-air cooling has made possible construction of transformers less expensive and about 70% lighter and smaller than self-cooled units of similar rating. Other power-transformer displays explain how capital investment can be lowered through standardization, proper selection, co-ordination of insulation with arrester protection, and the matching of cooling to the application. Through standardization alone, the ex-

hibits point out, savings up to 50% have been achieved.

The need for "holding good voltage" is emphasized in an operating exhibit of a cutaway induction voltage regulator which shows visually how these regulators keep voltage constant at the point of use. A step voltage regulator switch housed in a plastic case permits visitors to see how it operates.

Another display explains how a.c. secondary-network systems provide a necessary safeguard against "faults" which might occur within a city's power distribution system. Other exhibits present technical and application information on: unit sub-stations for any voltage requirements; metal-clad switchgear; load-center unit sub-stations; cable of all types; distribution transformers, and insulators.

### Motors and Controls

Hundreds of the most modern motors and control devices, many of them functioning in a series of operating-drive systems, occupy 1½ cars of the train.

The measurement and control of a non-electrical quantity is demonstrated in a liquid-level operating display which utilizes a complete, co-ordinated process instrumentation system. The level of a column of liquid in a large transparent tube mounted on the display panel can be changed rapidly by the visitor by the simple adjustment of a hand dial. Selected levels, scaled off on the tube, are accurately maintained by the system, despite changes in load on the pump, which also can be made by the visitor. Such other variables as flow and pressure are controlled in this exhibit through automatic bleed devices and through the continuous, precise control of a motor-driven pump.

Explosion-proof and dust-explosion-proof features of Tri-Clad motors are pointed up in another unit of the Drives and Control section. Encased in separate transparent boxes, two motors, one driving a fan, the other a pump, spray themselves with dust and water during continuous operation.

Exhibits of the latest designs of electric equipment used in modern materials handling include electric motors, controls and accessories for cranes, hoists, conveyors, car dumpers, draglines, and shovels. One is a new heavy-duty crane motor designed for higher maximum safe speeds for quick response and precise load spotting.

A working model of an electrically operated conveyor drive demonstrates the importance of using co-ordinated, engineered drive and control systems. Visitors can operate the conveyor, speeding it up or slowing it down by means of push buttons provided for the purpose. All drives are visible.

How planned plant lighting "pays off" in terms of safety, efficiency, convenience and prestige is shown by luminaires and floodlights for outdoor use and complete lines of incandescent and fluorescent lamps for indoors.

Boundary-line lighting offers inexpensive protection against intruders and decreases the number of watchmen required. The lighting of docks, railway sidings, and truck-loading areas makes possible accurate and fast materials-handling. The lighting of entrances and exits makes it easy to direct the flow of people and materials in and out of the building. Illumination of loading platforms pays in reduced errors and accidents, and increases efficiency. Construction-area floodlighting enables workers to operate efficiently after dark. The lighting of dark areas around factory buildings prevents accidents and sabotage. Illumination of parking lots helps the flow of traffic and reduces accidents. Recreational lighting multiplies the use of sports facilities. Floodlighting of signs, landscaping, and main buildings attracts favorable attention and add to community spirit.

Outdoor-lighting equipment for these includes luminaires for both series and multiple circuits, and for use with lamps rated from 2,500 to 10,000 lumens. Also on display are floodlights, ranging from the 1,500-watt giant used for sports lighting to a small 200/250-watt model for use on moving machinery.

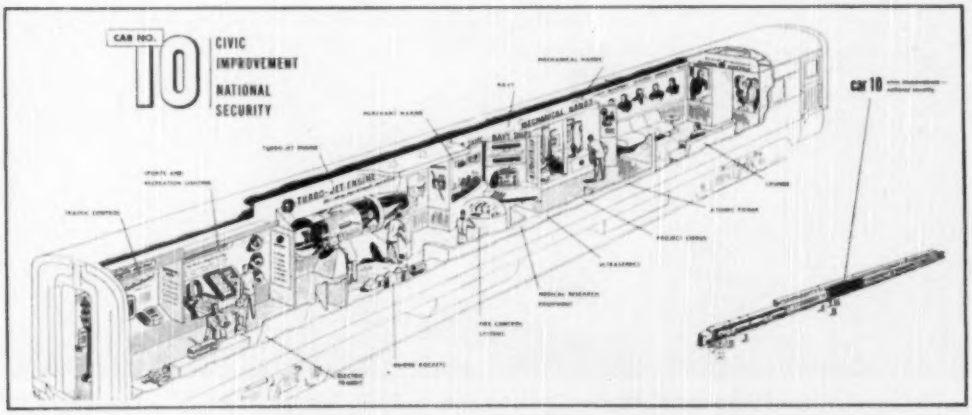
Seven ways to further community progress and development are:

- Lighting business streets and traffic arteries
- Controlling vehicular and pedestrian traffic
- Reducing smoke nuisance to a minimum
- Illuminating sports fields and recreational areas
- Operating waterworks and disposing of sewage
- Modernizing community transit systems
- Lighting and marking airport runways and taxiways

Emphasizing the need for communities to draw up a master street-lighting plan as a means of achieving more comfortable seeing, this exhibit shows a variety of luminaires specifically engineered for white-way, suburban, through-way, and other lighting. The display points out that adequate lighting saves lives, reduces crime, aids business, cuts accidents, improves property values, and saves taxpayers' money.

Shown in a related exhibit are three fluorescent luminaires for street lighting applications—one for arterial roadways, one for continuous-strip, fence-height lighting and one for continuous-strip tunnel illumination. A stereopticon-type viewer enables visitors to inspect recent successful applications of fluorescent street-lighting fixtures of this type in the British Isles.

How coordinated traffic control



speeds traffic is explained by the most modern types of traffic signals, controllers, and program timers. Featured is the new expansible controller which provides remote cycle change and full system flexibility.

### Smoke Density Indicated

An operating model of a typical smokestack enables visitors to see how a smoke density indicator may be applied to reduce smoke, soot accumulation, and fuel consumption. Receiving its signals from the photoelectric equipment mounted in the stack, an instrument indicates the percentage of smoke density, and a recorder gives a continuous reading of density for operational checks. The exhibit shows also how a magnetic relay, included with the equipment, may be used to ring "a too-much-smoke alarm" or to control an air blower for improved fuel efficiency.

Coordinated electric systems for disposing of sewage and for pumping water within a community aid in the reduction of disease, enhance property values and provide better facilities for fishing, swimming, and water transportation. Visualized are integrated equipments for sewage treatment and pumping, including motor-driven blowers, "Cabinetrol," limitamp controls, vertical synchronous motors, unit substations, and outdoor sub-stations.

How traffic congestion can be substantially reduced through the movement of people by means of electric transit is shown in another exhibit. The display points out that a modern electric transit vehicle can carry as many people as 40 automobiles.

The need for adequate runway lighting to maintain landing visibility in instrument weather, night or day, is stressed. Lighting, the display shows, helps airlines to keep schedules, speeds traffic operations, and results in higher revenue for airports. Represented are high- and medium-intensity runway and marker lights, airport-lighting controls, and slope-line approach lighting. A typical high-intensity runway lighting installation is depicted in a three-dimensional mural which gives visitors the impression of viewing a correctly lighted field from the central tower.

# Asphalt Admixture Produces Improved Portland Cement Concrete

By P. E. McCOY
*Research Engineer*
*American Bitumuls Co.*

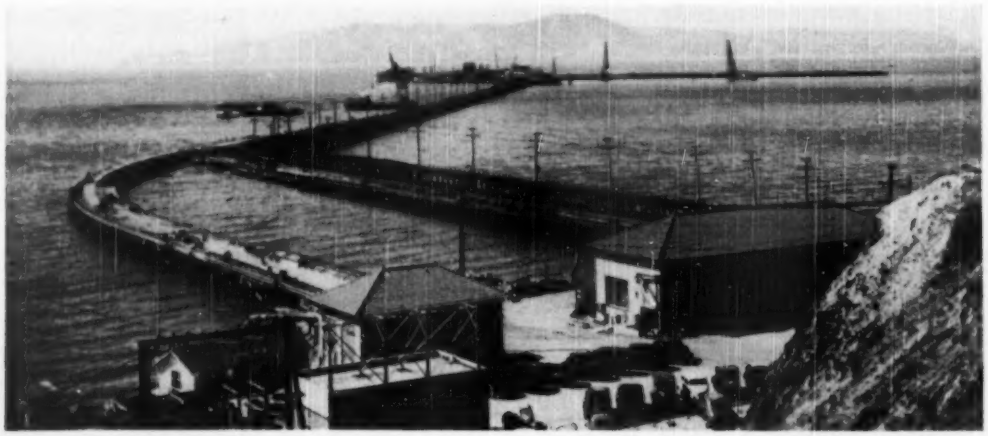
AN ADMIXTURE of emulsified asphalt in portland-cement concrete appears to offer the means of counteracting the remaining flaws in the engineer's great building material—portland-cement concrete. These weaknesses are well recognized. One is susceptibility to water absorption. Concrete changes in dimensions through variations in water content. This lack of dimensional stability causes internal stresses harmful to the service life of the structure. Disruptive forces of ice crystals forming inside the concrete are well known. Water, seeping into concrete by capillary action, many times deposits sulphates of sodium or magnesium that crystallize when dry, causing similar disruptive stresses.

Recognition of this and other weaknesses prompted research with asphalt that would improve the invaluable portland-cement concrete as a building material. A basic requirement was that whatever should be used would not impair the great natural strength of the concrete. Since an emulsified form of asphalt seemed to present the best possibilities for success, a concerted effort was made to develop a new, improved type of emulsion.

This research finally bore fruit. A product was achieved which contributed qualities of water resistance, salt protection, impact absorption and an over-all durability while preserving the natural strength of the concrete.

This special type of emulsified asphalt, when used in amounts from 1 to 1½ gallons per sack of cement in structural concrete, dries to form a thin water-repellent film of asphalt which is an integral part of the concrete.

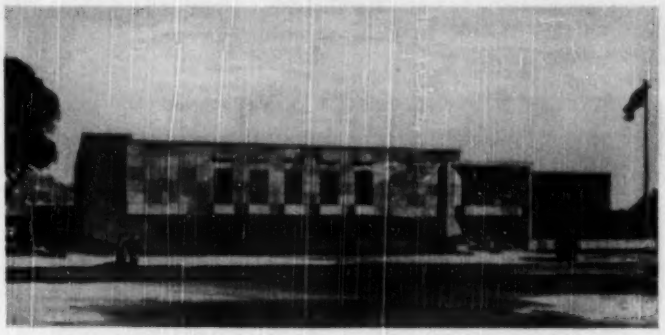
Appearance-wise, the new product is on the market as a chocolate-brown liquid of about table-cream consistency. It contains from 55 to 60% of finely ground hard paving asphalt, having particle dimensions of about 1/10,000 inch in diameter. The product is added in or after the mixing water during the batch-mixing of the concrete. Depending upon the mix design, it is usually the practice to maintain workability by holding out an amount of water equivalent to the full volume of added emulsion for high-slump concrete, or to one-half the volume for low-slump concrete.



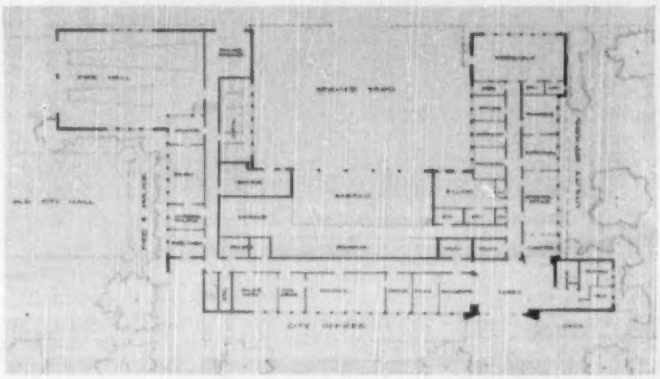
**A refinery's multi-million-dollar loading pier. Piles, capping, and deck slabs are of the new treated concrete.**

# Harriman Builds Utility-Municipal Building

By GERALD W. SHAW
*Executive Director*
*Tennessee Municipal Technical Advisory Service*



Architect's sketch of the new Harriman utility-municipal building.



First-floor plan of the two-story structure.

A "MULTI-PURPOSE" building capable of accommodating general municipal needs and other utility operations is being constructed in Harriman, Tenn. (1940 population, 5,620), financed initially by local electric-system revenue bonds, or out of surplus earnings of the electric distribution system. The local electric system will erect and own the building under an arrangement with the Tennessee Valley Authority.

TVA-connected municipally owned electricity-distribution systems in Tennessee purchase power at wholesale from TVA under the terms of a standard contract which specifies and limits uses of local power revenues. Joint operations with other types of municipal utility systems such as water works, and with general governmental services, often achieve substantial operating economies. These joint operations have been accepted by TVA, so long as strict accounting procedures are observed and revenues of the local electric systems are not diverted for other purposes.

## Clinton's Pioneer Role

Other departments of the city government using the building must pay a fair rental calculated to be adequate to amortize the additional investment and to offset operating costs of that portion of the structure so used. The City of Clinton, Tenn., pioneered in this development, by constructing the first such joint utility municipal building, completed in 1949. A few other such projects have been completed, but it appears that the trend will accelerate rapidly as conditions more favorable to building construction develop.

A major role has been played by local officials in obtaining these public buildings for their cities. Mayors, council members, power board representatives, and others have displayed initiative, foresight, and ingenuity in working out the details of financing the joint-use municipal buildings, especially under terms which TVA would accept.

The Harriman Utility-Municipal building will be located in convenient City Hall Park, on a site contributed by the city, which provides adequate space for beautification of the surrounding grounds. The exterior presents a pleasing combination of incombustible material, including glass, metal, brick, and precast slabs. Modern mechanical features are specified, such as electric panel heating in offices, and for the auditorium a warm-air system will be installed which can later be converted to air conditioning.

## Accommodations

The new building will house all municipal offices and departments, including city-owned utilities. Complete units for the power department and water department are planned, including storerooms and a garage. Offices for the mayor, city judge, city treasurer, and chief of police are provided, together with space for a council chamber, a police court, a jail, and the street department. The fire-department unit, with headquarters space and a garage, is at the east end of the building, opening on Walden Street. The auditorium, with a seating capacity of 550, is located on the second floor and Claremont will pay for its sweeper in building in addition to the modern corridor and stairway leading to it directly from the main entrance.

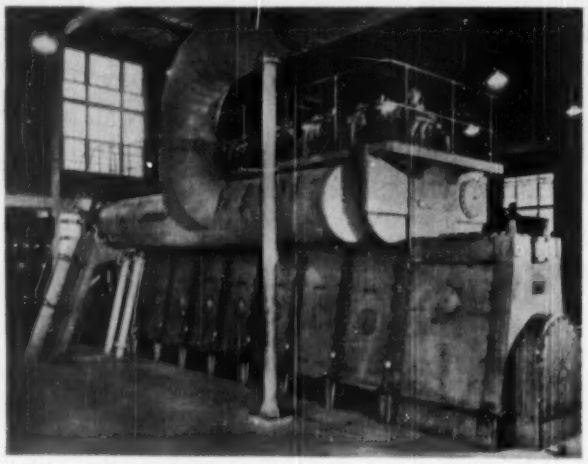
Cost of the building, estimated at $225,000, will be financed by revenue bonds of the Harriman Electric System. Since all outstanding indebtedness of the system has been retired, this proposed issue will not impair the system's credit capacity needed to finance any future expansion or improvement in electric service.

Serving with Chairman Ed Browder on the Harriman Utility Board are L. O. Scott, J. A. Taylor, H. A. Dillard, and L. W. Adkisson. J. W. Love is Manager of Utilities. The Harriman Board of Mayor and Aldermen consists of Roy A. Roberts, Mayor, and L. W. Adkisson, W. S. Clinton, R. W. King, Raymond Shipwash, and O. O. Williams.

Architects for the Harriman Utilities-Municipal Building, and for the first of such joint-use buildings at Clinton, are Bianculli, Palm and Purnell, of Chattanooga, Tenn.

# Bloomington Water and Electricity Service Grow Side by Side

By GLENN C. BOYER
*Associate Professor*
*Missouri School of Mines*
*Rolla, Mo.*



The 2,800-hp diesel is the latest addition to Bloomington's electric plant.

FOR three-quarters of a century Bloomington, Ill., has been supplying water to its citizens. For 50 years it has been in the electrical business. Today it is supplying water to all of its citizens, lighting its streets, and supplying electricity to a limited number of commercial and residential consumers. Both services are under the direction of C. C. Williams, Superintendent of Water and Light.

The development of the city's electrical business is so intimately linked with the development of an adequate water supply that the history of the two developments can hardly be separated. The water works was started in 1875 with an open-pit well on the site of the present electric generating station. In 1899 the city started its own street-lighting system. Although the Bloomington Electric Light Company tried to buy the electrical plant from the city shortly after its installation, the move was never successful. In 1907 two-phase alternating current was introduced on the city system.

When it became necessary for the city to enlarge its water-works installation in 1909, electric water pumping was substituted for the previously steam-operated pumping units. It was then that Bloomington established the policy of generating the electricity required for its own needs. There were many at that time who wanted the city plant to sell electricity to all residents of the city, but the policy of general distribution of electricity was not then adopted.

## New Water Supply Needed

For the next 20 years, the City of Bloomington continued to supply water and street-lighting service from the original water-works site. In 1929 it became necessary to find a new water supply. Because of the cost of the new supply—a lake approximately 15 miles from town—and because the city did not possess the bonding power necessary to finance the water-works improvements, a private water company was formed to finance and build the necessary facilities. The company, in attempting to carry out the policy of the city to supply power for its own use from its own plant, applied to the Public Service Commission for a certificate of convenience and necessity to construct a transmission line from the city power plant to the lake site to supply power for water pumping. The local power company offered to sell the water company power at the dam site, and in return take power from the city's plant in Bloomington. The Public Service Commission denied the water company permission to build the transmission line.

## Diesel Plant Established

Citizens of Bloomington, far from pleased with the turn of affairs, insisted that their city start active competition with the Illinois Power Company for business in the city. As a result of this insistence, the city started active competition for electric business in 1930.

In 1932 a diesel-engine generating station was built by the city on the old water-works site. Three 750-hp Fairbanks-Morse units were installed. A fourth unit, a Worthington engine of 750-hp capacity, was added in 1940.

The latest addition to the plant is a Nordberg 2,800-hp diesel engine, placed in operation on November 23, 1949. This unit is part of the city's long-range plan to remain in active competition for electric utility business in the community with the Illinois Power Company. There are many interesting features in this latest addition to Bloomington's utility plant.

The new engine is a 7-cylinder, 21½-inch bore, 29-inch stroke, two-stroke cycle, 225-rpm, blower-scavenged diesel. It is equipped with individual Bosch fuel pumps for each cylinder. Timed force-feed lubrication is provided at six points on each cylinder. A Woodward Type IC governor controls the engine speed. The scavenging blower is driven directly from the engine crankshaft.

Engine controls are centered on a self-supporting cubicle where cooling-water, lubricating-oil fuel-oil, and starting-air pressure, as well as exhaust-gas temperature, may be read, and where starting switches are located for the auxiliary lubricating-oil pump, jacket-water pump, raw-water pump, and barring-gear motor.

The generator has a capacity of 1,980 kw at 0.8 power factor, three-phase, 60-cycle, and is wound for operation at either 4,160 or 2,400 volts. The

necessary flywheel effect is incorporated in a flywheel located between the engine and generator. Excitation for the unit is furnished by a 25-kw shunt-wound, belt-driven, direct-current unit, operating at 125 volts and 1,150 rpm. Both generator and exciter were built by the Elliott Company.

All auxiliary equipment for engine operation is located in the basement. In consists of a starting-air tank and motor-driven starting-air compressor, lubricating-oil filter, auxiliary lubricating-oil pump, duplex lubricating-oil and fuel-oil strainers, shell-and-tube lubricating-oil and jacket-water coolers, raw-water pump, jacket-water pump, and emergency cooling-water pump. The latter pump is arranged to be used for either raw or jacket-water service.

Intake air is filtered by 16 American 20- by 20-inch stationary filter cells, after which it is passed through a Maxim Type MUA intake-air muffler. A Maxim Type MUC exhaust muffler is used. Hot-water-heating coils, installed in the muffler, supply hot water for building heating.

### Piping System Planned Carefully

Considerable care has been used in planning the piping system for fuel and lubricating oil, cooling water, and starting air to insure accessibility and ease of operation and maintenance. All piping is welded. A color scheme has been used for painting all piping to aid the staff in operating procedures.

Engine-jacket water is cooled in a closed system by means of shell and tube type heat exchangers. Lubricating oil is also cooled by raw water passing through a heat exchanger.

Fuel-oil storage of 152,000 gallons in four tanks is available. Fuel is delivered by railroad tank car to a spur located on the plant site and pumped to tank storage. A 10,000-gallon lubricating-oil storage is also provided.

The new Nordberg unit is housed in a 39-by-77-foot addition to the power-plant building originally constructed in 1932. The floor arrangement provides for a shaft centerline spacing of 22½ feet between the latest unit and the next engine to be installed. The building is 33 feet in height above the operating floor. Basement depth is 10½ feet at the engine end of the unit, and 9 feet along the engine foundation and the generator end of the unit. The substructure is of reinforced concrete, while the superstructure is brick and steel frame. The south wall of the addition is faced with flat transite sheets to facilitate plant extension at a later date. A chain hoist, with travelling dolley hung from a roof beam on the centerline of the unit, facilitates engine maintenance.

The switchgear installed with the new generating unit provides control facilities for the generating unit and five feeders. An overhead cable connection is installed between the bus of the original gear and the new installation, since the two switchgear sections are at some considerable distance apart.

# Cutting Operating Costs and Providing Funds for Future Improvements

By WAYNE E. THOMPSON
*City Manager*
*Richmond, Calif.*

TO DEVELOP means of increasing efficiency and cutting costs in city operations, weekly meetings are held of the heads of the various departments of Richmond's municipal government.

A very useful tool in stimulating ideas along these lines is the wide circulation of Management Information Service reports of the International City Managers' Association among all department heads and assistants who may be concerned with the particular report. As an example, the report on Corporation Yard practices was read by the Director of Public Works, the Assistant Director of Public Works, the Master Mechanic, the Purchasing Agent and the City Auditor, each of whom, prior to general discussion at a department-head meeting, submitted a written critique of the report.

In similar fashion, the booklet of the ICMA, *How Cities Can Cut Costs*, was sent to all department heads and they were requested to check their particular department's operations against the list contained therein. At an early department heads' meeting a round-table will be held of cost-cutting features which are common to nearly all departments. It has been found that this technique not only serves to spread new ideas among municipal personnel, but acts as a lever to produce further suggestions from some of the personnel.

Ideas gained from THE AMERICAN CITY and other sources are helpful, of course, in this connection.

### Backlog for Emergency Construction

To provide for the funding of future capital improvements by the city, a resolution was recently adopted by the City Council which allocates one-third of the annual revenues received from parking meters to a special capital improvements fund. Advances under recent federal legislation for public-works planning will be used to provide the plans for future public works and those not of an urgent nature will be deferred for the time being in order to provide a backlog in the event of serious economic dislocations and resultant unemployment. Numerous projects are under consideration by the city, including half a dozen grade separations in cooperation with the two transcontinental railroads entering the city; a sewage-treatment plant; an aquatic park, and a drill tower for the Fire Department. It is expected that other money will be available to supplement this special account from general funds and other governmental levels.

### Accessory Equipment

Starting-air compressor
Ingersoll Rand, Type 30, 5 x 3 x 3½ Model H, driven by General Electric 5-hp triclad motor

Lubricating-oil filter
Hilco Hyflow Type HFA-6

Auxiliary lubricating oil pump
Blackmer Fig. 3115 gear type, 5.7/1 speed reducer and Westinghouse 15-hp motor

Raw-water pump
Allis-Chalmers Electrifugal pump 5x4 Type SS-L driven by a 15-hp motor.

Jacket-water pump
Same as raw-water pump

Emergency pump
Same as raw-water pump

Lubricating-oil cooler
Ross Type 1910 CP

Jacket-water cooler
Ross

Fuel-oil strainer
Nugent Size 4-R duplex

Lubricating-oil strainer
Nordberg duplex, 400-gpm capacity

# Annexation Problems and Progress—

## *Typified in case study of expansion of Michigan cities and villages in the 1940's*

By ALBERT G. BALLERT
*Chief of Research Division*
*and*
JESSIE I. BOURQUIN
*Research Analyst*
*Michigan Department of Economic Development*
*Lansing, Mich.*

**Under whatever type of state legislation a city must operate, a sound and continuous annexation program should be developed to replace the intermittent, feverish-project method. Such a comprehensive program involves collecting and analyzing facts about the fringe populace and economy, directions of new buildings, etc. The orderly future development of the fringe area can be greatly aided by the adoption of an intelligent annexation program which will replace emotion with reason.**

THE PHYSICAL expansion of cities is a problem in many sections of America. It is being met with vigor in some states while in others obstacles, particularly legal ones, have hampered this growth through annexation.

Outstanding in the number of municipalities adding territory is California. During 1948, for example, 52 cities of 5,000 or more persons in this state made annexations.[1] Texas, Ohio, and Illinois followed with 20 to 25 each. Together these four states accounted for 40% of the nation's 289 annexations reported for 1948 by cities and villages in the population group mentioned. Texas and California also have been leaders in recent years with respect to communities which have made annexations of considerable size. This, of course, is closely associated with the great development and large population growth which has occurred in the urban areas of these states in the war and post-war years.

Exceptional cases of municipal expansion are: Dallas, with 39 square miles added in 1945; Fort Worth, with 35 square miles in 1946, and Houston, with 79 square miles in 1949. It appears likely that the Houston annexation has been surpassed in area only by the Los Angeles addition of 170 square miles in 1915. A large number of annexations have been made in several California and Texas cities, and also in Oklahoma and Wisconsin. In Milwaukee, a Department of Annexation makes the land-acquisition program a continuous one. The major areal growth which has taken place during the 1940's, particularly in cities of the Southwest and West, in contrast to the minor expansion of most northeastern cities, will be a significant factor in noting population changes in the 1950 census.

In many states the dual popular-vote requirement is a factor retarding municipal expansion. The unique legal processes for annexation in Virginia and Texas, however, make these states worthy of special mention. Under Virginia's statutes annexation cases are decided not by a vote of the people involved, but by a three-man annexation court which may also alter the proposed boundaries of the area to be taken into the city.[2] The effectiveness of Virginia's procedure makes it of value for investigation by officials in other states. In Texas, authority is conferred upon home-rule cities (those having a population over 5,000) to annex adjoining territory by ordinance or by charter amendment. Thus, fringe areas can be secured without a vote of the people in affected areas. General-law municipalities are much more limited, however, in their power to expand. Opinions are in sharp conflict on the merits of the Texas home-rule city law on annexation.

### Michigan: a Case Study

To indicate what is happening to the physical expansion of cities and villages in a typical state in the 1940's, the authors recently completed an intensive study, some of whose results are summarized as follows:

Michigan showed an outstanding gain in population during the 1940's—second in the nation—but this growth has not resulted in a similar areal expansion among its municipalities.[3] Annexations occurred in only 31 of the 478 cities and villages incorporated in 1940, and the majority (about 75%) were located in the southern three tiers of counties or in a zone lying southward from the state capital. Another type of municipal growth resulted from the incorporation of 10 cities and villages during the decade. Detroit, Grand Rapids, and Flint have added no territory since the '20's.

A review of the annexations in Michigan reveals that they were predominantly for residential purposes. More than 4,600 acres of the total of 6,857 acres annexed were for this use (with some commercial frontage included). Over 67% of all annexations, both by area and by number, are in this category. The same predominance of residential areas being annexed is typical of the nation as a whole.[4]

Some of the reasons for municipalities favoring such increases are: to provide more building sites with city services; more effectively to control and guide haphazard urban fringe development; to widen the tax base, and to prevent the possibility of being blocked in natural directions of growth. Major reasons suggested by the annexed areas for joining the municipality are: to obtain more complete and better-quality city services than are provided by the township or special districts, and to become a part of the city school system with its attendant advantages.

### Industrial Annexations

Land for public purposes comprised nearly 30% of the total acreage added by Michigan municipalities. While schools and parks represented the greatest number of annexations, a major portion of the acreage is utilized for airports.

Annexations for industrial use claim but a small part of the total areas acquired by Michigan municipalities. In many cities, however, additional lands are badly needed for industry and are of great value to the community in broadening and strengthening its entire economic base. An analysis recently made of the supply of land for industrial use within industrially zoned areas of Kalamazoo provides the type of basic information needed by every com-

[1] Based on analysis of an extensive annexation survey appearing in the *Municipal Year Book* for 1949.

[2] See Thomas H. Reed, "Progress in Metropolitan Integration" *Public Administration Review*, IX (Winter, 1949) pp. 1-10.

[3] According to the estimate of the U. S. Bureau of the Census, the population of Michigan on July 1, 1949, was approximated at 6,344,000, or 1,092,000 above the 1940 census figure. Only California's gain was greater.

[4] C. E. Ridley and O. F. Nolting, ed., *The Municipal Year Book*: 1949, (Chicago, International City Managers' Assn., 1949) p. 95.

munity in planning a sound industrial growth.[5] In a nationwide survey only 11 out of 40 cities were reported as annexing territory including industry.[6]

Activity in annexation during the 1940's showed considerable variation from a low during the war years to the period of greatest activity at the end of the decade. A majority of the municipalities annexing territory in the last two years were located in the major population centers of the state. This coincides with the high residential building activity in these areas during the same period.

Statutory difficulties are often noted as the key reason for retarded municipal growth.[7] A recent amendment to Section 9 of the Home Rule Act has, however, aided in one type of annexation. This amendment, passed in 1947 and known as the Vacant Land Act has facilitated the acquiring of unoccupied lands.[8] The value of the act is shown in that more than one-quarter of the annexations made in 1948, and one-half those in 1949, resulted from its use. Unfortunately this legislation has a limited use, owing to the fringe development of most cities.

## Financial and Physical Problems

The financial and physical problems appear to be phases of the subject which will hamper the expansion of many Michigan communities despite alteration of the state statutes.

On the one hand, there is the poor financial status of cities in general, with the 15-mill tax limitation as an added feature, while on the other hand there is little prospect of obtaining much revenue from the unincorporated territory in question, particularly if it is residential. Some such adjacent areas also have incurred considerable debts. The widely mentioned lower taxes of suburban areas become questionable in many cases when all the factors are weighed. Exception occurs, however, in townships where sales-tax funds and/or industrial taxes remove much of the tax burden from the home owner.

Among the physical factors, vacant land within the present boundaries of many communities hampers further expansion. In Saginaw and Dearborn, for example, approximately a third of the land remains undeveloped or sparsely settled. Although municipal idle land normally is somewhat less prominent, still such areas must be traversed in many communities in order to bring utilities to isolated neighborhoods.

The unchanged boundaries of most cities in Michigan during the 1940's (and 1930's) appear to be caused by the lack of need or desire for additional territory. This static condition has come about in some of the larger cities of Michigan, however, because of opposing viewpoints of the interested parties. Reputedly higher city taxes have brought those beyond the corporate limits to resist annexation, while the question of sufficient revenue from suburban areas desiring to be annexed is making the cities increasingly cautious about expanding.

### Annexations to Michigan Municipalities, 1940-1949*

| *City or Village* | *Total Acres* | *No.* |
|---|---|---|
| Ann Arbor | 419.53 | 21 |
| Bad Axe | 2.75 | 1 |
| Belleville | 117.86 | 3 |
| Battle Creek | 226.11 | 1 |
| Benton Harbor | 156.35 | 5 |
| Birmingham | 99.95 | 6 |
| Centreville | .38 | 1 |
| Charlotte | 10.25 | 1 |
| Clinton | 505.00 | 2 |
| East Lansing | 753.20 | 4 |
| Eau Claire | 27.00 | 1 |
| Farmington | 97.09 | 1 |
| Ferndale | 53.54 | 3 |
| Grandville | 105.61 | 3 |
| Grant | 360.00 | 1 |
| Ishpeming | 80.00 | 1 |
| Kalamazoo | 91.60 | 2 |
| Lansing | 1,600.00 | 2 |
| Marshall | 60.00 | 1 |
| Milan | 80.00 | 2 |
| Muskegon | 54.42 | 3 |
| New Haven | 38.50 | 1 |
| Paw Paw | 50.00 | 2 |
| Quincy | 56.60 | 1 |
| Royal Oak | 640.00 | 1 |
| St. Joseph | 23.00 | 1 |
| South Haven | 80.00 | 1 |
| Sturgis | 59.85 | 1 |
| Suttons Bay | 33.67 | 1 |
| Tawas City | 75.00 | 1 |
| Traverse City | 900.00 | 1 |
| Total | 6,857.26 | 76 |

Incorporation of 10 municipalities may be considered as another form of expansion of Michigan cities and villages. They are widely distributed throughout the lower peninsula and only two—Hazel Park and Roosevelt Park—are contiguous with existing municipalities. Hazel Park, largest of the group, although having an area of less than 3 square miles, also had the greatest population (15,380—Special Census 1941). Livonia, to the west of Detroit, is a 1950 incorporation which will be of continuing interest. This city, formerly a township of approximately 36 square miles, is now the second largest municipality in the state. While growth is rapid in this section of the metropolitan fringe, providing city services for the broadly distributed population will prove a real challenge to the new city.

*Acreages were obtained from local officials or by computing areas from legal descriptions.

[5] *Industrial Land Supply, Kalamazoo City and Township*, S. V. Bennett. (Kalamazoo, W. E. Upjohn Institute for Community Research, 1949).

[6] *Annexation of Industrial Areas by Cities*, American Municipal Association and the American Society of Planning Officials, September 1949.

[7] William O. Winter, "Annexation as a Solution to the Fringe Problem: An Analysis of Past and Potential Annexations of Suburban Areas to the City of Flint, Michigan," (Unpublished Ph.D. dissertation) University of Michigan, 1950.

[8] For a description of the procedures in annexing land to Michigan cities and villages, see Robert E. Fryer, *Michigan Municipal Review*, Vol. 21, (January and February 1948).

## *To Plant Columbus And Plant Ohio*

UNDER the leadership of L. C. Chadwick, Professor of Horticulture at Ohio State University, a "Plant America" campaign was launched in Columbus on April 14, in which it is hoped many other cities and states will cooperate.

Plant America [said Professor Chadwick] is not simply a city planning project. Included are the farmer and the farmstead, reforestation, soil conservation, strip-mine planting, roadside beautification, metropolitan and state park development, and civic planting and beautification. In the latter category are included the improvement and planting of river banks, cleaning up and beautifying main city approaches, industrial-site improvement, beautification of church and school grounds, railroad-site improvement, development of city parks, and last, but not least, home beautification.

Plant Ohio may well start at the state level. Our forests need expansion, submarginal land should be reforested, and strip-mined land planted to forest trees. Ohio is taking a step forward in the seeding and planting of strip-mined areas.

Our interests here today are not only in the campaign of Plant Ohio to help Plant America, but also to Plant Columbus to help Plant Ohio. There is much to be done in Columbus. Our parks are inadequate, the main streets into the city should be improved by proper zoning, our river banks could be beautified and, due to the recent ravages of the Phloem Necrosis disease, we are woefully in need of a more extensive, well-formulated and properly executed street-tree-planting program.

Columbus is, in many respects, ideally situated to make it one of the most beautiful cities in America. Two main rivers have their confluence near the center of Columbus. These river banks, if properly planted, could become one of the most important sites of its kind in America. It could emulate the beautiful lake-front area of Milwaukee, the Genesee River parks of Rochester, and the Tidal Basin and the Potomac River areas of Washington, which attract thousands of people each year. . . .

A recent notable trend has been the landscaping and planting of industrial sites. All of you, no doubt, have seen several industrial sites that were tree-shaded and well landscaped. How much more attractive they look than bare, unkept properties. Does it pay in dollars and cents? I am sure it does or we would not find this practice spreading. Some industrial concerns maintain that well-landscaped grounds around their buildings, providing shade and better working conditions, are profitable because of the effect on the employees and the public. . . .

The Plant America Campaign is sponsored by the American Association of Nurserymen. Further information about the campaign can be obtained from the Association's Public Information Service at 295 Madison Ave., New York 17, N. Y.

These Flexible rods cleared the smaller-diameter sewers. Native laborers quickly learned how to operate the equipment.

**British Crown Colony city changes methods to rehabilitate sewers deteriorated during the Japanese occupation**

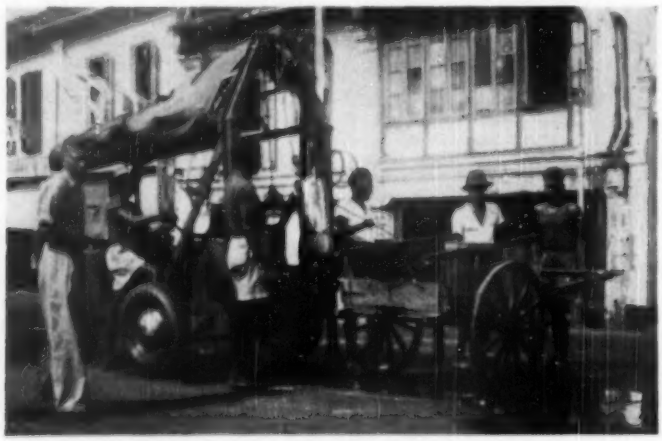
By E. R. L. O'TOOLE
*Chief Sewerage Engineer*
*Singapore Municipal Office*

# Singapore Adopts Mechanical Equipment To Clean Its Sewers

THE cleaning of sewers in Singapore has, for many years, been carried out by the very simple method of flushing with water. The deposits of silt and other matter scoured out by the flushing action were retained in traps inserted in the manholes and removed in ordinary buckets which were lifted from the bottom of the manholes. Chokes in sewers were cleared manually with the use of Manila cane rods, each 3 feet long, with detachable self-locking brass screw joints. Where deposits of silt and other articles could not be removed by flushing, they were partially cleared by rodding and then flushed to clear the remaining deposits.

The proper flow of sewage in the sewers in Singapore is very vital, since in this tropical climate sewage becomes septic very quickly, especially when it comes in contact with any deposits of septic sludge.

The immediate result of any large deposits of septic sewage is the formation of hydrogen sulphide, which experience has already shown, in one length of sewer, to be capable of corrosive action on the concrete pipes to such an extent as to cause the complete collapse of the sewer pipes.



The bucket was used to open the larger sewers.

### Wartime Occupation

As a result of little maintenance of sewers during the Japanese occupation, many of the main sewers have large accumulations of sand, sludge, and other objects. In the larger sewers of very flat gradients, it was found impossible to remove this material, even though we tried the inflated rubber balls that normally increased the sewage velocity enough to force the sediment to manhole or other removal point.

In consequence of this, we realized very early that to effect a complete rehabilitation of these sewers, some mechanical means of sewer cleaning was necessary. It was fortunate that the Flexible Sewer-Rod Equipment Company was able to supply promptly two sets of equipment, one being the sewer-rod machine and the other the power-bucket machine. Both sets arrived in Singapore in November of last year and were put into immediate use.

Both machines have been in constant use, the former being used on the less silted sewers from 6 to 24 inches in diameter, the latter on the more badly silted sewers from 12 inches to 60 inches in diameter. In spite of the fact that the maintenance men had no experience in such mechanical

methods of sewer cleaning, there was no difficulty in training them, and after over a year's work they have formed themselves into very efficient groups and are making excellent progress in this work.

One example of the work done by the power bucket was a section of 24-inch diameter sewer in which silt had collected to a depth of 16 inches. This sewer was cleared with only one hitch, and that was caused by drawing the bucket too far along the silted sewer and resulted in heaping up the silt to such an extent that it choked the sewer. In this instance the Flexible sewer rod proved very useful, as it cleared this choke very efficiently.

### Used on Constant Basis

The equipment is used constantly in conjunction with routine flushing and is very quick and efficient in use. It is also used on all occasions when chokes in sewers have to be cleared. These chokes, averaging about 18 a month, are caused by an amazing variety of objects which have found their way into the sewerage system, but so far they have been effectively cleared.

The following extract from last year's record of operation of these machines will be of interest, and gives an indication of the amount of work done with these machines out of a total of about 130 miles of sewers, at present maintained by the Department.

WITH FLEXIBLE-ROD EQUIPMENT

| | Feet |
|---|---|
| 6" diameter pipes | 24,288 |
| 9" " " | 71,871 |
| 12" " " | 12,031 |
| 15" " " | 3,166 |
| 24" " " | 2,482 |
| Total | 113,778 |

WITH POWER-BUCKET MACHINE

| | Feet |
|---|---|
| 12" diameter pipes | 2,414 |
| 15" " " | 1,319 |
| 21" " " | 1,843 |
| 24" " " | 1,465 |
| 27" " " | 874 |
| 42" " " | 4,141 |
| 48" " " | 197 |
| 51" " " | 1,746 |
| 60" " " | 502 |
| Total | 14,501 |

The approximate quantity of silt removed amounted to 456 cubic yards.

We have found another important aspect of the new experience of cleaning sewers by mechanical means. It is the attitude of the men, who, prior to the arrival of this equipment, were obliged to work under very unfavorable conditions. The nature of the work undertaken by sewer-maintenance men in any part of the world is unpleasant. It has been more so in Singapore, owing to the large amount of filth to be cleared and to the very septic state of sewage found in most of the badly silted sewers.

It can be appreciated that the advent of mechanical sewer cleaning in Singapore has been well accepted by the maintenance men as a step towards alleviating to a great extent what is a very unpleasant and monotonous occupation. The men forming the maintenance gangs are of Indian and Malay nationality, who until now have never realized the possibility of mechanical cleaning of sewers, and it was of interest to note their desire to master the use of these machines and to improve on their past progress.

# Salaries of Municipal Officials: 1950

| Title of Official | Cities with Population of 50,000 to 100,000 | | | Cities with Population of 10,000 to 25,000 | | |
|---|---|---|---|---|---|---|
| | Average Salary | Lowest Salary | Highest Salary | Average Salary | Lowest Salary | Highest Salary |
| Mayor (non-manager cities) | $ 6,283 | $3,500 | $10,000 | $ 3,093 | $1,800 | $ 8,400 |
| Mayor (manager cities) | 1,741 | 0 | 6,000 | 517 | 0 | 3,600 |
| City Manager | 11,769 | 5,000 | 15,015 | 7,101 | 3,600 | 12,500 |
| City Clerk | 5,645 | 2,760 | 8,500 | 3,819 | 2,000 | 10,750 |
| Director of Finance | 5,374 | 3,000 | 8,196 | 4,330 | 2,400 | 6,600 |
| Controller | 5,538 | 3,180 | 8,700 | 4,241 | 2,400 | 6,500 |
| Auditor | 5,108 | 2,700 | 9,300 | 3,826 | 2,080 | 7,800 |
| Treasurer | 4,966 | 2,700 | 8,500 | 3,752 | 2,000 | 10,000 |
| Engineer | 5,556 | 3,300 | 8,700 | 4,802 | 2,100 | 10,750 |
| Director of Public Works | 5,993 | 3,000 | 10,000 | 4,698 | 2,700 | 10,680 |
| Superintendent of Streets | 4,481 | 3,000 | 7,200 | 3,521 | 2,000 | 6,196 |
| Fire Chief | 5,073 | 3,300 | 8,400 | 3,736 | 2,280 | 6,840 |
| Police Chief | 5,207 | 3,300 | 8,500 | 3,862 | 2,160 | 6,600 |
| Purchasing Agent | 4,293 | 2,520 | 6,240 | 3,567 | 2,500 | 5,220 |
| Planning Director | 5,547 | 3,000 | 7,500 | 4,721 | 3,600 | 7,380 |
| Chief Personnel Officer | 4,724 | 3,000 | 8,400 | 4,136 | 2,400 | 5,810 |
| Attorney | 5,768 | 3,250 | 12,000 | 3,175 | 2,000 | 8,000 |
| Health Officer | 5,506 | 2,400 | 10,000 | 3,739 | 2,000 | 12,850 |
| Superintendent of Parks | 4,496 | 3,000 | 7,200 | 3,331 | 2,000 | 6,360 |
| Recreation Director | 4,495 | 2,649 | 7,500 | 3,786 | 2,028 | 8,340 |
| Librarian | 4,599 | 2,800 | 6,200 | 3,104 | 2,040 | 6,480 |
| Superintendent of Schools | 9,706 | 7,000 | 15,000 | 6,849 | 3,000 | 15,000 |

THE 1950 edition of the *Municipal Year Book*, to be published this month by the International City Managers Association, will carry detailed tabulations of the salaries of the various categories of municipal officials in six population groups. From advance information furnished by ICMA to THE AMERICAN CITY, the accompanying tabulation of a portion of these figures has been prepared.

In an introductory note to its tabulation of salary data, the *Municipal Year Book* explains that:

The annual salaries of selected municipal officials as of January 1, 1950, for individual cities were supplied to the Year Book directly by city officials in January and February, 1950. Only salaries of $2,000 or more have been included except in the case of mayors of council-manager cities, whose salaries are reported regardless of size. Salaries of officials designated as part-time are also excluded except the salaries of attorneys and health officers unless these salaries are below $2,000. . . .

In cases where an individual held more than one position, the total salary received from the several positions was considered and this salary classified under the first of his positions as shown in Table VIII; for example, if an individual was reported holding the positions of city clerk, treasurer, and purchasing agent, he was classified as city clerk, and the total salary was included under "city clerk." Cost-of-living bonuses were included where known.

Some interesting comparisons can be made between the rank order of average salaries of selected officials in the several population groups. City managers and superintendents of schools are the two highest-paid positions except in the population group over 500,000, where mayors replace city managers, since there are no council-manager cities over 500,000. In the largest city-size group, the mayor, school superintendent, controller, attorney, director of public works, and superintendent of parks are the top six in that order. In the other population groups the top six positions are filled by the city manager and superintendent of schools who are first and second respectively in each city-size group. The four remaining positions are held variously by the mayor of non-manager cities, attorney, health officer, engineer, director of public works, director of finance, planning director, and city clerk. The mayor holds the third position in the 250,000 to 500,000, 100,000 to 250,000, and 50,000 to 100,000 population groups and the engineer in the two remaining groups. In the 250,000 to 500,000 and 100,000 to 250,000 groups the attorney is fourth, health officer fifth, and the engineer and director of finance, respectively, sixth.

In the 50,000 to 100,000 group the director of public works is fourth, attorney fifth, and city clerk sixth. In the 25,000 to 50,000 group the director of public works is fourth, mayor fifth, and director of finance sixth. In every city-size group under 500,000 population, the mayors of manager cities show the lowest average salaries.

# Two Cities Adopt New Street-Sweeping Method

**Culver City and Claremont, Calif., use central dumping to lower costs and increase the efficiency of the work**

FROM two California cities come reports of a system of motorized street-sweeping, described as "central dumping," that promises to lower street-cleaning costs.

The cities are Culver City (population 20,000), home of Hal Roach, RKO Pathe, Selznick International, and MGM studios; and Claremont (population 4,600), home of Pomona and Scripps Colleges, located on the foothill slopes of the San Gabriel mountains.

### Central Dumping

In "central dumping," the operator of the street sweeper does not dump his load on the street when the hopper of his machine is filled, as is the general procedure, but drives his machine to the city dump or a designated central dumping area and dumps his load there. The distance of the city dump from the sweeping area determines whether the sweeper goes there or to a central dump, where the loads are picked up by truck and loading crew at a designated time. In order to make "central dumping" feasible, the motor sweeper must have sufficient hopper capacity to permit sweeping of considerable area between dumps, and be capable of traveling at near-automotive speeds with a fully loaded hopper.

John I. Bothwell, Superintendent of Public Works of Culver City, which operates two Wayne sweepers, one five years old and the other purchased last year, is an old exponent of "central dumping." Culver City stretches out for a distance of about 4 miles along Washington Boulevard and is from a few blocks to a mile and a half wide. There is a heavy flow of traffic to and through Culver City, the year round, which adds to its sweeping problems. All sweeping is done between 3:30 a.m. and 10:30 a.m.

The business district is swept daily and the balance of the city, divided into zones, is swept completely about every 10 days, a zone a day. The state highway running through the city is swept weekly.

The business district is only a half mile from the city dump, and the sweepers take each hopper load to the dump. Thus, no pick-up expense is incurred for the business area. In the rest of the city, the sweepers sweep in the same zone at the same time, dividing it so each has about the same distance to travel to the dumping point. At 10:30, when sweeping is usually concluded, two pick-up trucks and a loader go to the central dumping area. Loading the debris dumped by the sweepers is done in a matter of minutes.

Superintendent Bothwell estimates that the truck crews devote not more than an hour and a half each day to disposing of the sweeper debris, including picking up and hauling away. Inasmuch as the crews and trucks are used on other public works jobs, a close check is kept on the time devoted to each assignment. Under this arrangement, only a minimum amount of pick-up time and expense has to be charged against street-sweeping costs.

**In Culver City, Superintendent John I. Bothwell checks with sweeper-operator Dave Fuller as he completes first sweeper dump of day at central dumping point in residential zone. Central dumping facilitates loading by pick-up crews.**

### Strict Account Kept

The Public Works Department keeps a strict account of all costs. The sweeper operators are required to file a daily report when they bring their sweepers back to the yard for their daily washing and inspection by yard mechanics. The report shows the name of the operator, machine number, date, starting time, finishing time, actual sweeping hours, time in yard, speedometer at start, speedometer at finish, number of full loads collected, gasoline and oil consumed, tanks of water used, mileage. This information is accumulated on a monthly report which totals curb-miles swept, sweeping hours, hours in a year, number of dumps made, sweeping-hour cost, yard-time cost, total gasoline and oil expense, total repair costs, including parts and time, and the cost per curb-mile to operate the machine.

Culver City's curb-mile cost per sweeper for the past year has averaged $0.62 based on a monthly sweeping

average of 485 miles per machine. During the spring and summer months, it is not unusual for the sweepers to average more than 550 curb miles per month, sweeping only 5 days per week. The monthly curb-mile costs, during the past year, varied from a low of $0.52 to a high of $0.766. A depreciation of $900 per year, per machine, is charged to the sweeping costs. This adds $0.15½ per curb-mile to Culver City's sweeping bill, bringing the curb-mile total to $0.77½, which is still low.

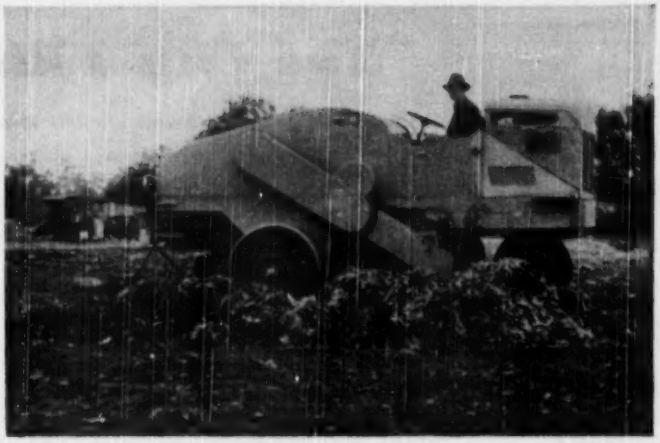
### Directly to City Dump

Since no pick-up expense is involved in the business district (the sweepers take their loads directly to the city dump), $0.77½ represents the total curb-mile cost of sweeping the downtown area. However, in the residential area it is necessary to add the cost of picking up the sweeper debris in the central dumping zones. A rule of thumb used by the Public Works Department in arriving at this cost, is to charge the time of each 2½-yard pick-up truck at $3.50 per hour and loader at $7 per hour, including the driver's and loader operator's time. Figuring they are on the street-cleaning job an average of 1½ hours per day, the total pick-up expense for the day for the two pick-up trucks and loader is only $21, or $0.48½ per curb-mile when charged against the mileage of the two sweepers. Thus, when all street-cleaning expenses are totaled ($0.77½ for sweeping and $0.48½ for pick-up), we find that Culver City does its street cleaning for $1.26 per curb-mile.

While Culver City's sweeping costs are low, the quality of the job being done is high, as was testified recently by J. Hunt, manager of the Culver City Chamber of Commerce. In a letter to the Public Works Department, Mr. Hunt expressed keen appreciation for the exceptionally clean appearance of the city's streets during the year.

Mr. Bothwell, who has been in Culver City's Public Works Department for the past 14 years, was an early exponent of "central dumping" and put his present system into operation as soon as he obtained sweepers with sufficient hopper capacity, sweeping speed, and traveling speed to make it feasible.

Claremont presents another example of how "central dumping" can be utilized to materially lower street-cleaning costs. Prior to August 1948, the city operated a relay broom in conjunction with hand sweeping. This system permitted only one sweeping per week of the business section and only a limited sweeping of residential streets. Two pick-up trucks and crews were kept busy a large part of the day cleaning the sweeping from the streets. The annual cost of this restricted service was $7,000. City Manager Keith A. Murdoch estimates that his curb-mile sweeping cost was in the neighborhood of $20.



**Claremont has made a two-thirds reduction in its street-sweeping bill and doubled its sweeping service by having its sweeper take each hopper load to the city dump, approximately 1½ miles from the business district. Only three or four trips are made per day, because of the sweeper's large hopper capacity.**

Confronted on one hand with the need for extending his street-sweeping operations and increasing the frequency of sweeping, and, on the other, with the necessity of lowering costs, the City Manager investigated motorized sweeping. He discovered that by using a sweeper with a large hopper capacity, he could eliminate the need for pick-up trucks and crews by having the sweeper take each hopper load to the city dump, only 1½ miles from the farthest sweeping area. He sold this idea to the city fathers and was authorized to purchase a Wayne sweeper with a two-yard hopper.

The sweeper was delivered in August 1948 from the Wayne plant in Pomona, only a few miles from Claremont. Street sweeping was immediately converted into a one-man operation. Now, instead of sweeping the business district once a week, as was done under the old system, the business streets are being swept twice a week, or oftener if needed. Streets that formerly were swept only occasionally are being swept once a week, and all residential streets at least once every 30 days.

The costs for the first full year of operation of this greatly expanded street-sweeping service was only $2,500, including depreciation, as compared to the previous cost of $7,000. The curb-mile cost to sweep Claremont's 63 curb-miles of streets was reduced to less than $1. At the current costs, Claremont will pay for its sweeper in two years out of savings.

In commenting on the success of his new street-sweeping system, City Manager Murdoch said :

"We are not only doing a better job of street cleaning for all sections of our city, for almost a third of what it had cost previously, but we are freeing our pick-up trucks and crews for important work that we formerly didn't have the funds for, nor time or manpower to undertake."

## *Another Texas City Grows Up*

TEXAS cities are still affected with growing pains.

Latest municipality of the state to spread its wings is La Porte—a neighboring city to Houston in east Harris County. According to the International City Managers' Association, three secret annexation actions this year by La Porte's City Council have increased the size of the city from an area of 5 square miles to about 50 square miles. In January, Houston nearly doubled its size when it annexed 79 square miles of unincorporated territory—the largest annexation by any city in the U.S. in the last decade.

La Porte's annexation action was taken under its home-rule charter, adopted about a year ago. Under Texas law, home-rule cities can annex any adjacent unincorporated areas by simply passing the proper ordinances.

City officials estimated the annexation will net their city a total population of 7,000—a 2,000 increase over the former estimated population of the city. Properties in the area will not be placed on the La Porte tax rolls until 1951, and city services to the area will not be possible until some time in the future.

**M**unicipal
**P**ublic
**R**elations

# The City Tells Its Story

By HENRY DAVIS NADIG, *Director of Public Relations, New York Regional Plan Association*
*Executive Director, Association of Municipal Public Relations Officers*

## Active Official Correspondence Can Be a Valuable MPR Asset

YOU will probably agree that your correspondence is one of the most neglected of your official chores, and that sometimes it is a *chore* indeed.

Yet it may very well be that we ought to classify correspondence among the media of municipal public relations. At any rate, it is so potentially significant a factor in good local government public relations, that more attention should be given to it—more concern than, I believe, the average city government official really does give it.

What is good official correspondence? What is the significance of it? How does or how can it bear upon MPR? How can you manage to carry on fruitful correspondence? Can it help better to tell your city's story?

First of all, as a premise, you have to assume that we are all in about the same boat: for most of us, keeping up with our respective correspondence is ten times tougher than trying to keep up with the proverbial Joneses.

The Joneses (assuming you may be trying to keep up with them) are always or nearly always present: they keep you on your toes. Letters somehow can get buried in the bottom of your "in" tray or way down in your "future" file; so that by the time you get around to them it's either too late to respond or you're too embarrassed to do so.

Let anyone who has not been an offender in this correspondence-neglect field be the first one to holler a ho-ho. Are there any ho-hoes?

There is a certain amount of pleasure (?) in realizing that one has no monopoly on the chief human imperfection anent letter-writing: neglect to write!

Nevertheless, neither you nor I nor the other fellow can take any real satisfaction out of the fact, where and when it occurs, of failure in one of the most important facets of good public relations.

Since most officials have little time to write letters, it should be easy to meet the first qualification of a good letter: *brevity*. This in turn should lead to *clarity* and the avoidance of gobbledegook. *Tone* is likewise an important factor. In official correspondence *personal interest* and *human interest* can do a great deal toward achieving the desired reaction at the receiving end. *Promptness* in response is also a part of good correspondence. *Precision* is required, particularly in response to direct questions. *Sincerity* and *courtesy* both will show up in good letters.

Sure these are schoolboy things. But they are *basic*. And they are pointed out because I have noticed them to an encouragingly growing degree in letters from city managers, other officials, and from different persons who deal in civic affairs. If a letter is worth writing, it is worth writing as well as you can. In a fast-paced age, we are sometimes prone to forget this and toss off anything, or just not write. But many of us are beginning to see that there is quite an element of loss—personally and municipally—in both diffidence and entire negligence.

### Significance

It was a long time (two or three months, I think) before I received an answer to a certain letter; but when the response came from one of the foremost city managers in the country, I found that he had taken time to write a very informative and specifically detailed letter and sent along illustrative material as well. Neither illness, nor busyness, nor the long period of delay prevented him from fulfilling what he regarded as not only a courtesy but a part of his responsibilities.

Such a letter signifies, in addition to personal conscientiousness, a real regard for the municipality itself. The municipality is worth talking about, worth the effort to enhance in "foreign" regard, worth every good impression that can be created for it.

Letters from MPR men in England have been so full of interest and so well documented in details of local activities in many of the towns, that a tour of them and a study of their MPR operations is one of my great desires. Their work has a significance that shows up in the correspondence.

Any and every municipality can achieve significance, can communicate its quality, character and ambitions, through its officials' correspondence. Some may be doing this more or less unconsciously—by virtue of latent talents and natural MPR consciousness on the part of officials. But municipal government, in order to improve, must raise more generally the level of its dealings with people both locally and abroad. Since one of the chief avenues of communication is through correspondence, therein lies a challenge to lift the quality in the exchange of the written word.

This is definitely an MPR problem. It is within the province of the MPR man not to tell the mayor or the city manager how to write their letters but so to carry on their activities that the whole tone of municipal government operation is one of high quality, of genuine cooperation, of real good.

### Techniques

Fruitful correspondence is the kind that gets results at both ends. Except in the very small municipalities, the chief municipal officer can not be expected to handle the bulk of queries. But just as a good MPR man will see to it that information is brought up as quickly and as completely as possible in answer to a press request, so the mayor or the city manager can depend upon departments to furnish answers to a great percentage of mail.

No one likes to get the run-around. If the city manager writes promptly, when queried, that the highway department will furnish the required response and provided that the response comes along before many days, the inquirer both has his answer and is pleased with the official attention. Normally, the department head should have the responsibility for direct answers to matters coming within his own jurisdiction.

In special cases, the chief official will write detailed letters of response over his own signature. Good MPR

would see that departmental information, as required, is speedily forthcoming so that this can be done.

Interdepartmental coordination in relation to communications can prevent confusion, overlapping and dissatisfaction. It is the business of the MPR man to facilitate such coordination by the application of practical methods of channeling written queries and following them through. Skilfully and in a myriad of small ways, by bringing each and every official into the communications picture, he can produce a business-like system that will enable his official city to speak significantly for itself.

### Letterheads

While physical appearance and mere attractiveness should not be given undue importance, the value of an attractive letterhead is not to be underestimated.

We have all reacted at different times and in different ways to various kinds of letterheads, and there is no doubt that everyone is affected by them —even if subconsciously. A dignified, quiet letterhead in good taste is pleasing and inoffensive. An over-ornate or too heavily printed letterhead arouses a sense of dislike.

Especially with first communications, a letterhead is a well-tailored suit. It makes a good impression at the start. It can often create interest and enhance the receptivity of the written matter it bears. But, of course, it cannot offset poor writing or diffidence any more than good tailoring can thoroughly cloak the ill-bred or bad-mannered.

Various examples of municipal letterheads show very clearly that in a large number of cases insufficient care is taken in the design and production of official paper. It might even be that a rather cheap looking letterhead, because of failure to attend to this important phase of correspondence, actually does not bespeak the real nature of the community which it officially represents. In certain instances this might be an extremely important factor in municipal progress or retrogression—slight as this simple feature may seem to be.

So—take a look at your own letterhead. If you are proud of it, send me a copy. The not-so-good I shall probably come upon anyway.

There are many other factors involved in promoting MPR through official correspondence, such as the importance of crisp, neat typing, arrangement of letters, use of carbon copies as an informational device, etc., but some of these you may think are too elementary for discussion in these pages—though I assure you, their importance cannot be minimized. Other factors will be discussed in future columns of the "City Tells Its Story."

## AMPRO's First Annual Meeting

MAYOR DELESSEPS S. MORRISON, of New Orleans, and Joseph C. Ingraham, ace reporter of the *New York Times*, were chief speakers at the first annual meeting of the Association of Municipal Public Relations Officers held May 12 at the Waldorf-Astoria Hotel in New York City in connection with the annual meeting of the United States Conference of Mayors.

David Apter, executive assistant to Mayor Fletcher Bowron, of Los Angeles, Calif., was elected president of AMPRO. He succeeded Harold S. Rand, Public Relations Officer and Deputy Commissioner of Commerce, of Rochester, N. Y.

Mayor Morrison described some of the MPR techniques used in his city, and stressed the necessity, in today's municipal-government affairs, of having professional public-relations men as a part of local government operation. He explained that the experience of New Orleans, both in external promotion of the city and in keeping its citizens informed, was proving the value and practicability of expert MPR.

Mr. Ingraham spoke specifically of the press medium with relation to MPR and noted the importance of a central setup through which information could be obtained promptly by the press.

In his annual report, retiring President Rand cited the groundwork accomplished by AMPRO in pulling MPR men and women together during its first year of existence. He also pointed up a special challenge to AMPRO and MPR. Mr. Rand said:

> In these early years of municipal public relations, it seems to me that we should guard against the tendency of over-specialization. While this observation does not apply to us at present, the shadow of over-specialization has arisen already on the campus. There is too much evidence that students majoring in public relations are not being given the broad general background in both business and government which is so essential to good public-relations personnel. It is my belief that we, as public-relations workers, are worth but little to government or industry unless we offer besides our special skill in public relations an understanding of the mechanics and the general problems facing either industry or government. Let's step out of the era of the press agent and the publicity man. Anyone can write a speech or a story; only a person with training and background can interpret properly that same set of facts or statement of policy to the public.

Elected regional vice-presidents were Russell Bremer, Secretary, Commission of Publicity and Efficiency, Toledo, Ohio; Charles W. Vetters, Director of Public Relations, Corpus Christi, Texas; Ewen C. Dingwall, Administrative Assistant, Office of the Mayor, Seattle, Wash.; and Lee K. Jaffe, Director of Public Relations, Port of New York Authority. Special attention will be given to the development of MPR and AMPRO on a regional basis during the coming year.

Eric Carlson, associate editor of THE AMERICAN CITY, was re-elected secretary-treasurer, and Henry Davis Nadig, Public Relations Director, Regional Plan Association, New York, N. Y., was re-elected executive director. Elected to the Board were: Winfield Best, director of public relations, American Municipal Association, Chicago, Ill.; Frank E. Feliz, executive secretary, Committee on Establishing a Port Authority for San Francisco Bay; Melvin R. Freeman, public-relations manager, National Fire Protection Association, Boston, Mass.; Holte Agey, Publicity Director, Miami, Fla.; Hank Meyer, Director, Public Relations Department, Miami Beach, Fla.; Alex Pilch, Director, Research and Information Department, Dearborn, Mich.; Harold S. Rand, director of public relations, Rochester Department of Commerce, Rochester, N. Y.; William L. Sylvester, director of public relations, Department of Public Works, New York.

## *News Column on City Government*

FOR more than a year, "Let's Talk It Over," a regular feature newspaper column written by and credited to the City Manager, has been appearing in the *Sapulpa* (Okla.) *Herald*. The column has been a valuable tool in keeping the public informed, stimulating interest in municipal affairs, and promoting sound community improvements.

The column was published daily for a period of six months, during which time several proposed bond issues were being discussed. The explanations of the problems and alternatives proved a definite aid in getting priority programs approved. Civil-service problems and other projects have also received action, helped considerably by publication of the column.

The column is now published only once weekly, on Sunday, but continues to play up in an impartial way the community's progress, and the program and policies of the commission and local government. It has been especially useful in obtaining expressions of community opinion on particular issues, through questions and inquiries which are raised in it by the manager.

J. ORVILLE BUMPUS
*City Manager*
*Sapulpa, Okla.*

# Twelve Civic Centers for Los Angeles

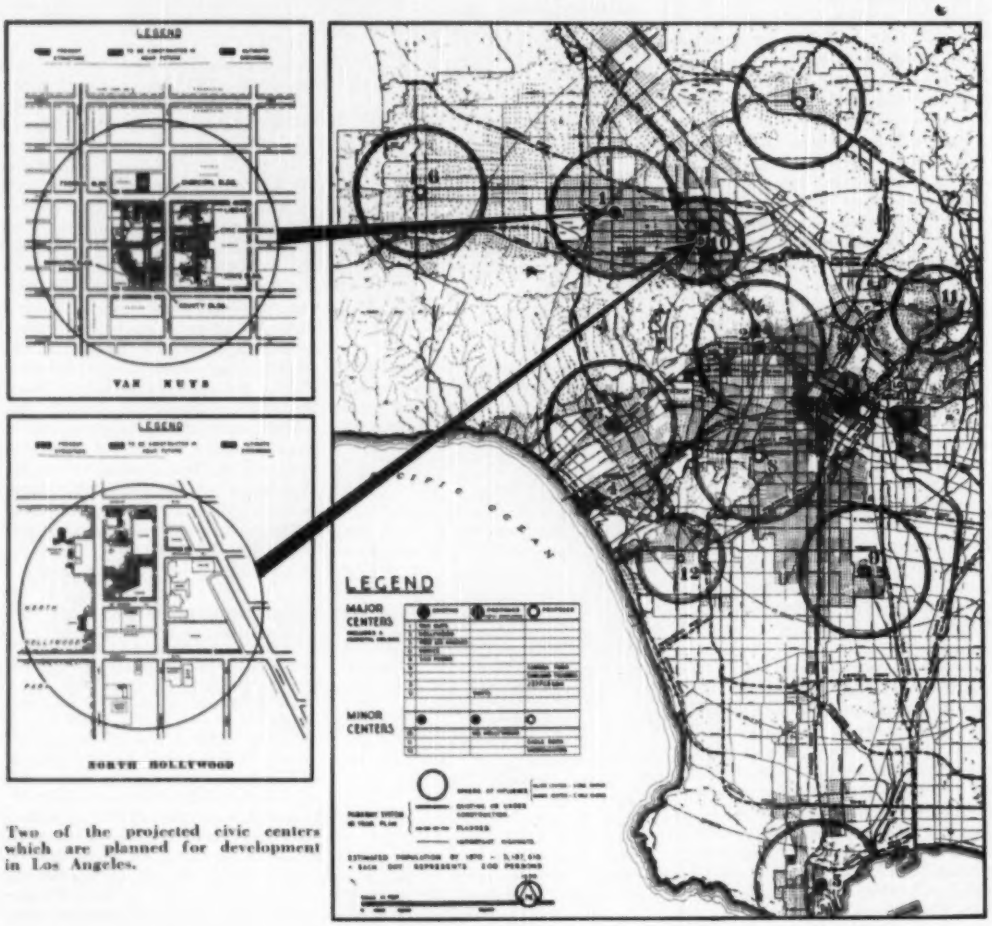
PLANS for 12 branch administrative centers in widely separated areas of the city are depicted in a recent report published by the Los Angeles City Planning Commission. The report declares that the grouping of related public buildings in well-planned, integrated branch administrative centers will promote economy, efficiency, convenience, attractiveness, and civic pride. It points out that the 453 square miles of Los Angeles and the city's rapid rate of growth make such branch centers a virtual necessity, when coupled with the fact that the main Civic Center offices in the heart of Los Angeles are already inadequate, and traffic problems in this area are acute.

The Planning Department proposes three miles as a reasonable radius for the area to be served by a major branch center, and two miles as a radius for the area to be served by a minor center. The report states:

> This would place the branch centers within easy reach of the people; many could undoubtedly walk to the nearest center; others could drive in five or ten minutes; and those relying upon public transportation would be able to reach their destination within less than a half hour. In this manner, virtually every resident of Los Angeles would be within a relatively short distance of some branch administrative center where he could transact most of the ordinary public business which heretofore has generally necessitated the long trip to the city hall.

The report points out that off-street parking facilities have been included in all the proposed branch centers, so as to minimize traffic delays and congestion in the neighborhood of the branch centers. In suggesting a possible grouping of buildings for each of the proposed center areas, the planning-department staff stresses that the plans are flexible and subject to change. Also, actual site developments can be undertaken in several distinct steps, as conditions warrant.

Careful study was made of departmental requirements, site-acquisition costs, existing structures, population to be served, and transportation facilities before the areas for the centers were determined.




Two of the projected civic centers which are planned for development in Los Angeles.

# Greencastle, Ind., Corrects A Sewerage "Experiment"

**New treatment plant is designed to supplant an aeration-type treatment that did not give good results. New sewers are also included in the present improvement program**

GREENCASTLE, Ind. (pop. 5,000), is today on the road that will lead to correction of its sewerage problems and give sewer service to the entire city. In the past, the system of sewers has reached only that portion of town where sewers could operate by gravity, and the sewage-treatment plant has been a combination of settling tank and aeration that promised excellent performance but was never able to produce.

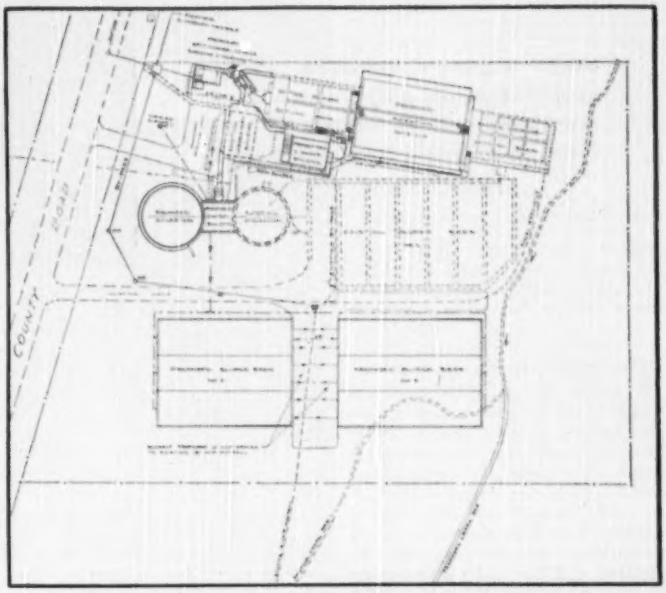
### Existing Works Consist of Two Grit Chambers

The existing sewage-disposal works, built in 1935, consists essentially of two grit chambers that are inoperative; a bar screen; deep-hoppered primary-sedimentation tanks; a circular-flow aeration tank, and a secondary settling tank. Sludge is handled in a separate sludge-digestion tank and then discharged to standard open drying beds. Plant effluent discharges to a small ditch which empties into a nearby creek with a flow frequently lower than the plant discharge. The original design anticipated 90% removal for a flow of 1 mgd. But tests by the Indiana State Board of Health in 1939 indicated about 70% removal, with a flow of only 360,000 gallons per day.

### New Sewer Lines

The new improvements will mean placing nearly 38,000 lineal feet of vitrified-clay sewer pipe varying from 6 to 12 inches. In addition, there will be four lift stations which will require installation of 5,000 lineal feet of cast-iron force main.

The new treatment equipment will supply grit-chamber facilities that will effectively remove this inorganic material. The present settling basins will be supplied with mechanical sludge-removal equipment and skimmers to remove floating surface material. The revised facilities will supply activated-sludge secondary treatment designed along the lines that have been more conventionally used, instead of the aeration equipment now in use. The aerated sewage will then go to the present secondary basins equipped with continuous sludge-removal equipment. The final effluent will be chlorinated.




**A line drawing showing existing facilities of the Greencastle, Ind., sewage-treatment plant and proposed facilities for its improvement.**

An additional 35-foot-diameter sludge digester will be added, as well as six additional sludge-drying beds.

### Financed by Sewer Service Charges

The entire improvement program will be financed by a $450,000 bond issue, amortized over 25 years. The annual cost, including plant operation, will be something over $37,000. This will be financed by a sewer-service charge based on water use as follows:

| | | *per 100 cu. ft.* |
|---|---|---|
| First | 600 cu. ft. | $0.375 |
| Next | 1,500 " " | .35 |
| Next | 5,400 " " | .30 |
| Next | 52,500 " " | .25 |
| Over | 60,000 " " | .20 |

The rates will be based on a minimum quarterly charge of $2.25.

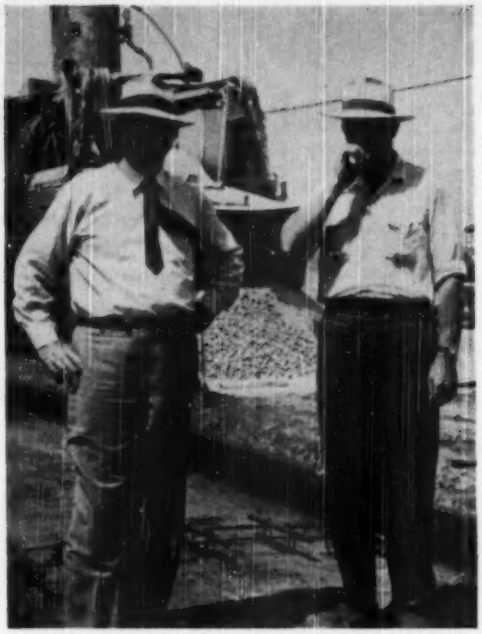
This income is expected to produce $53,400 per year at the start, and $56,771 for an average annual figure. This amount is enough to produce a substantial margin of safety for the financial portion of the work.

This municipal improvement has been undertaken under the leadership and administration of Harold Stewart, Mayor of Greencastle. The work is being designed and the financial structure established by Paul J. Kleiser and Associates, consulting engineers, Terre Haute, Ind.

# Paving Oklahoma's Busiest Street

By WILLIAM R. WOOTEN
*City Engineer*
*Tulsa, Okla.*

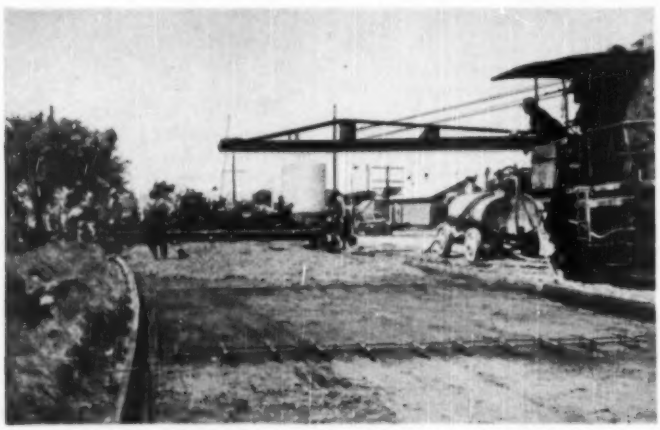
**Main highway between Tulsa and Oklahoma City, which also traverses a busy industrial district, is widened and resurfaced**



**The key figures in the Tulsa paving program are shown above. Left to right are William R. Wooten, City Engineer, and Paul Gulley, Principal Assistant Engineer.**

THE MOST heavily traveled roadway in the State of Oklahoma was widened and received a new surface last summer as part of a $3,000,000 program of city street improvements in Tulsa. This roadway is Sapulpa Road, which carries the traffic of U.S. 66 and U.S. 75 and is the main highway between Tulsa and Oklahoma City. It also traverses one of Tulsa's largest industrial districts. The improvement provides a roadway of 63 feet in width, with a 4-foot median strip to separate the traffic. The improved section is 2.7 miles in length, and 50% of its cost is borne by the state.

Other major improvements completed or under construction, the cost of which is paid entirely from city funds, include Peoria Avenue, being widened for 2½ miles to 44 feet; Lewis Avenue, widened for 4 miles to widths of 36 and 44 feet; Fifteenth Street, a 4-lane divided boulevard 1 mile in length; Main Street widened to 44 feet for 1 mile; and Twenty-First Street, being widened to 44 feet for 2 miles. Other projects under the bond program are the resurfacing of several major streets outside the downtown area. Downtown streets are also receiving a new surface, but the cost of this work, except for intersections, which are paid from bond funds, is paid for by abutting properties.

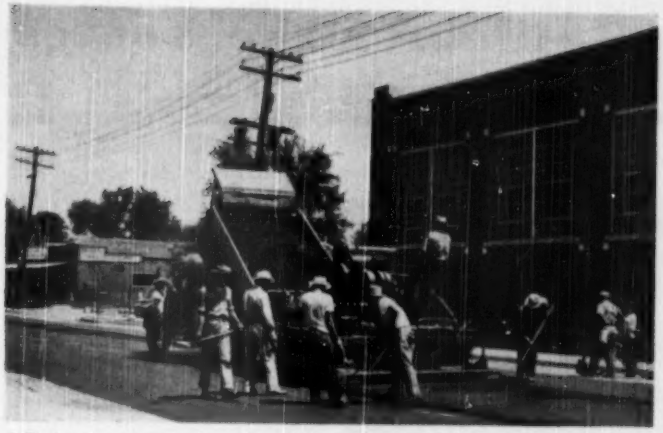


**A Kochring paver lays the concrete paving base, 34 cubic feet at a batch.**

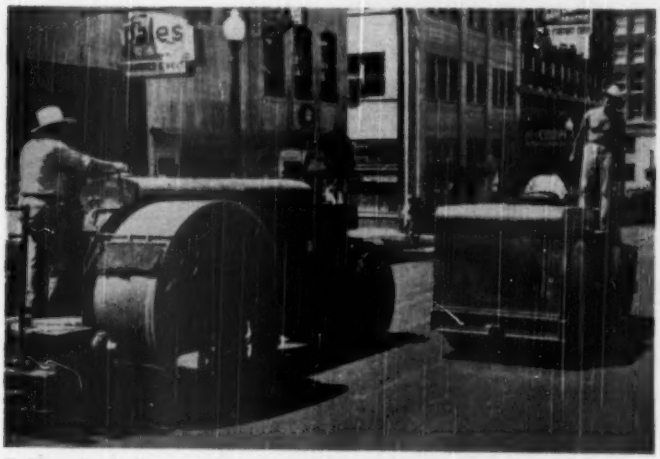
The city's pavements are all supported by soils of varying character, ranging from coarse sand to fine silt. Where there is a poor subgrade, the city blends sand into it with a Seaman Pulvimixer to change its classification to A-2.

Where streets were resurfaced, asphaltic concrete, laid in two courses, was employed. Where the existing pavement was of asphalt surface, all loose and impaired areas were removed and the new surface applied without removing the old surface course.

Widening usually consisted of a portland-cement concrete slab 7 inches in depth, with concrete mixed to the proportion of one sack of cement to not more than 2 cubic feet of sand and not more than 3 cubic feet of coarse aggregate. All measurements were based on weight rather than volume. A maximum of 6½ gallons of water per sack of cement was used to produce a mix with a slump of not more than 3½



**A Barber-Greene paver lays the asphalt surface to complete street construction.**



**Rolling closely followed the spreading. The work was performed in this case by a Galion tandem roller, right, and a Buffalo Springfield seer on the left.**

inches. Joints were placed in the concrete slab at intervals of 30 feet, each with load transfer dowels.

In some instances, asphaltic concrete was used for the widening slab. It is usually 7 inches in thickness and consists of a 5-inch base and 2-inch wearing surface. For this base course, limestone aggregate and washed river sand was used in accordance with the following sieve analysis:

BASE-COURSE AGGREGATE

| *Screen Size* | *% Passing* |
|---|---|
| 1½" | 100 |
| 1" | 99.4 |
| ½" | 71.5 |
| # 4 | 46.5 |
| #10 | 39.0 |
| #40 | 26.9 |
| #80 | 16.0 |
| #20 | 4.2 |
| Asphalt | 5.0 |

For the wearing surface, the following sieve analysis for aggregate was used:

| *Screen Size* | *% Passing* |
|---|---|
| ½" | 100 |
| # 4 | 64 |
| #10 | 48.7 |
| #40 | 28.5 |
| #80 | 15.4 |
| #200 | 5.4 |
| Asphalt | 5.5 |

Base-course asphalt was delivered at a temperature between 225° F. and 325° F., and placed with a Barber Greene paver in two courses. Final compaction was secured by rolling with 8- and 10-ton rollers at a rate of not more than 200 square yards per hour.

Wearing-surface mixtures were delivered to the paver at temperatures of 250° F. to 350° F., placement and compaction procedure being identical with that for base courses.

Where the work involves the widening of the existing pavements, the entire cost is paid from bond funds. Where original paving is constructed, the properties on each side, for a distance of half a block, are assessed for the cost of normal residential pavement 26 feet in width, the cost of all paving over this width, together with the cost of intersections, being paid from bond funds.

### Procedure Different for Residential Streets

The procedure outlined previously applies only to streets legally designated as major streets. Residential streets are paved entirely at the expense of abutting property.

The bond-issue paving program is being completed under the direction of the writer and Paul W. Gulley, Principal Assistant Engineer.

## *More Counties Streamline Government*

MORE U. S. counties are streamlining their administrative organization in an effort to make county government more responsive to the needs of their growing population.

The International City Managers' Association reports that in a recent special election in St. Louis County, Mo., a home-rule charter was approved by a 2-to-1 majority. Principal feature of the charter, which goes into effect next January 1, is establishment of a county council of seven members and a full-time elected supervisor, the county's chief executive officer. The charter election was held under a constitutional amendment which was adopted in 1945. Under the revised constitution, all Missouri counties with a population over 85,000 have the power to draft and adopt a home-rule charter.

Home-rule charters confer upon counties the power to legislate in matters of local concern rather than having such matters dealt with directly by state legislatures. They may be authorized in one of two forms: (1) constitutional amendment, as in the case of Missouri, which guarantees counties the right to adopt a charter drafted by the people of the community so long as it is in accord with the state constitution and general state laws. This gives great freedom with respect to organization and administration on the county level. (2) Permissive law, which provides optional forms of county government such as county-manager or the commission form. Individual counties are given authority to adopt one of these laws for its government.

At least 14 states have authorized home rule for their counties in one form or another. Included among those states that have taken action are California, Georgia, Louisiana, Maryland, Missouri, Montana, New York, North Carolina, North Dakota, Ohio, Oregon, Texas, Virginia, Washington.

# Clear Lake Solves

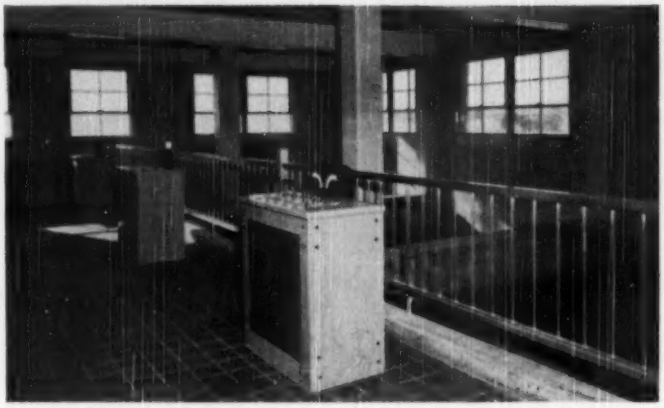
## Aerators, anthracite filters, multi-point chlorination

By H. S. SMITH
*Stanley Engineering Company*
*Muscatine, Iowa*

**A trim, attractive building was mandatory in this resort community.**

NOVEMBER 11, 1949, was a date for dual celebration in Clear Lake, Iowa. In addition to Armistice Day, it also marked the initial operation of one of the most modern and attractive small-city water-treatment plants in the Midwest, thereby bringing a victorious armistice in the city's long battle against unsatisfactory water.

The City of Clear Lake has a permanent population of 4,000 persons but, being located on one of Iowa's outstanding blue-water lakes, is a major recreational center with a temporary population of approximately 10,000 persons at the peak of the resort season. Water supply is taken from Clear Lake and, prior to construction of the new treatment plant, was treated only by chlorination and filtration through two pressure filters at a rate in excess of 3 gallons per square foot per minute. No treatment was provided prior to filtration.



**The filter operating floor. Filters have three Palmer surface washers.**

### Taste and Odor Problems Bad

Although the city is fortunate in having an adequate raw-water supply, the character of the supply requires adequate treatment to produce an acceptable water. Heavy tastes and odors of algae origin are prevalent in the late summer each year. The lake is silt bottom for the most part, and, although normal turbidity is less than 25 ppm, occasional high winds cause silt pick-up, which results in turbidities in excess of 500 ppm. The original treatment facilities did nothing more than strain and chlorinate the water and did little toward correction of the fundamental problems.

A further difficulty centered around the old 68,000-gallon standpipe which was the only storage on the system. Only 24,000 gallons of this capacity were usable storage above 35-pound system pressures, thereby providing no reserve and requiring system operation on essentially a direct pumping basis.

In 1945 the City Council retained the writer's firm to study these problems and to report to the city on the most feasible and economical method of providing acceptable water. After careful study, including consideration of a softened deep-well supply, it was recommended that Clear Lake be continued as the source of supply and that a modern 1-mgd clarification and filtration plant, together with a ½-mg elevated storage tank, be constructed. The recommended plant capacity and the elevated storage tank would permit production of normal daily demand with one-shift operation and would allow peak demands during the resort season to be met by 18- to 20-hour per day operation without exceeding plant capacity.

These recommendations were approved by the City Council and the Iowa State Department of Health, and the preparation of final plans and specifications was authorized. There was much discussion on the part of various civic groups on the final location for the new treatment plant. The logical location was, of course, on the lakefront near the original intake system. This area has been developed for a park, and concern was expressed that the new plant would detract from the park area.

It was finally agreed to use the rec-

# Water Supply Problems

**Improve taste and odor and insure an adequate supply of water**

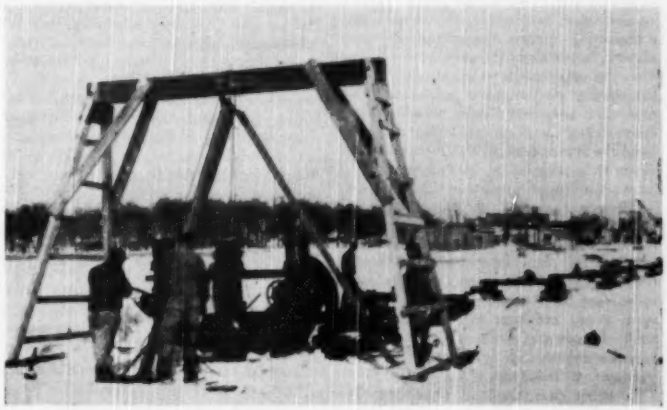
ommended location but to use every effort consistent with economical design to provide an attractive structure which would enhance rather than detract from the park. Careful attention was, therefore, given to the appearance of the structure and all units were enclosed within the building.

The essential features of the treatment process are as follows:

1. The raw-water intake system, consisting of 12-inch Universal cast iron pipe with a triple inlet about 9 feet below mean lake surface, 700 feet off shore; and two 1-mgd Peerless raw-water pumps in the treatment-plant pipe and pump gallery.
2. A 10-inch Infilco Multi-cone aerator located over a basin on the top floor of the building.
3. A 1-mgd Infilco Accelator in a basin inside the building. Three Infilco proportional dry feeders, located in the chemical-feeder room over the basin, feed alum, lime, and activated carbon. A Milton Roy proportional-feed pump, also located on this floor, feeds activated silica for aiding coagulation. The dry-feeder hoppers extend to the chemical storage floor above the feeder room. The silica makeup and storage tanks are also located on this floor.
4. Three 1/3-mgd filters equipped with Anthrafit filtering medium, Palmer surface washers, and Infilco controllers. All filter valves are Rensselaer hydraulically operated valves controlled through Infilco control tables on which are located loss-of-head and rate-of-flow gauges. Filters are washed with filtered water from the clear well by a 1,400-gpm Peerless wash-water pump with Infilco wash-water rate controller. Wash water is discharged to the sanitary-sewer system through a detention tank with controlled outlet to limit the rate of discharge to the sewers.
5. An 80,000-gallon clear well below the filters and pipe gallery.
6. The high-service pumping system, including one new 1-mgd Peerless motor-operated pump, one new 500-gpm Peerless pump driven by an International gasoline engine, and one ½-mgd Dayton Dowd pump relocated from the old plant.
7. Pressure carbon contact filters for further treatment of the filtered water during heavy taste and odor periods. The old pressure sand filters were reconditioned for this service.
8. Chlorination at any of the following points:
   a. Preceding the accelator basin.
   b. Entrance to the clear well.
   c. Following carbon contact filters.

   A Wallace & Tiernan vacuum-type chlorinator formerly used in the old plant was rebuilt and equipped with a two-point feed manifold for chlorination at the first two points. This machine has sufficient capacity for breakpoint dosages which will be used for taste and odor control. A new Wallace & Tiernan vacuum-type chlorinator with booster pump for chlorinating against line pressure is used for post-chlorination after the carbon filters to restore free chlorine removed by the activated carbon.
9. Builders-Providence venturi meters with indicating, recording, and totalizing registers for raw-water and high-service metering.
10. The following automatic-control features:
    a. Accelator basin-level control by means of a float-actuated, diaphragm-operated Fisher valve on the raw-water line.
    b. Float-operated solenoid shutoff of the filter-rate-controller valves in case of high clear-well level.
    c. Proportional feeding of chemicals by utilizing the raw-water-meter

**Chemicals are fed here. The Accelator basin drive is on the steel platform.**



**The raw-water intake was placed 700 feet from the shore of Clear Lake.**

transmitter to control the feeder motors.

11. A central control panel on the operating floor on which are located the flow meter registers, the clear well depth gauge, a recording pressure gauge and push buttons and indicating lights for all plant motors.

The entire plant is enclosed. The main building is four stories high and 47 feet by 44 feet in plan. The 80,000-gallon clear well occupies the lowest story. The pipe and pump gallery is located over the clear well with the floor about 5 feet below ground level. The operating floor includes an office and laboratory, washroom, chemical-feeder room over the accelerator basin, chlorinator room, and filter-operating aisle. Chemical storage and the aerator are located on the top floor. The carbon contact filters, garage, and work shop are located in a 47-by-18-foot one-story wing.

The exterior of the building is buff face brick. Interior walls are salt-glazed tile. Lobby and operating floors are red quarry tile. Aluminum metal trim is used extensively. Chemicals are handled by a tram system with electric hoist. A cantilever rail allows pickup with the hoist from trucks at the rear of the building. The pipe and pump gallery are liberally ventilated by mechanical ventilators to minimize condensation. Mechanical ventilation is also provided in the chemical-feeder and chlorinator rooms.

Construction was deferred until late in 1948 due to unstable conditions. In August 1948 a contract was awarded to Dobson Brothers Construction Company of Lincoln, Neb., for construction of the intake and treatment plant. Work was started on the intake in the winter of 1948-49. After bringing the intake line to the shore, work was suspended until the spring of 1949, at which time work on the treatment plant started. This work progressed without delay throughout the summer and fall of 1949, and water from the new plant was turned into the distribution system on November 11.

In January 1950, contracts were awarded to Pittsburgh-Des Moines Steel Company, of Des Moines, Iowa, and O. E. Peterson, of Clear Lake, Iowa, for construction of the ½-mg elevated tank and foundations. This work is in progress and will be completed by September 1950.

### Financing Improvements

The cost of the new plant and intake system was $260,000, which is being financed entirely by water revenue bonds. The cost of the tank and foundations is $75,000, which is being financed by general obligation bonds approved by a 15-to-1 majority at a special election in November, 1949.

Since completion the plant has been operated on a 24-hour schedule at about one-third capacity, owing to inadequate storage in the old standpipe. The new elevated tank will be placed in service in September of this year, after which time the plant will be operated at rated capacity for such periods each day as required to meet demand.

Tests on clarification-unit performance have shown effluent turbidity at rated capacity to be less than 3 ppm, or well below the 10-ppm performance guarantee. Wash-water and sludge-blowdown requirements have been less than 1% of raw-water pumpage, which is evidence of clarification unit efficiency.

Dr. A. B. Phillips was Mayor of Clear Lake at the inception of the project, and W. H. Ward is the Mayor of the present administration, under whose guidance the project has been built. Mr. Vern Hinds is water superintendent and chief operator of the new plant. The project was designed and construction supervised by the Stanley Engineering Company, of Muscatine, Iowa, under direction of the writer.

# "Your Rights In Court"

*WHEN the present Presiding Judge of the Municipal Court of the City of Winsted, Conn., took office, he had a leaflet entitled "Your Rights" prepared for distribution to all citizens presented in court on a charge of violating some law.*

*Believing that the text of this carefully prepared statement may offer a suggestion worth emulating in other town and city courts,* THE AMERICAN CITY *reprints the text in full:*

This is possibly your first visit to this Court, and we desire that you be fully advised as to your rights and duties. We also want every person who comes here to receive fair consideration and impartial treatment in conformity with the highest ideals of American justice.

Be on time, and when your name is called answer "present" and come forward promptly to a position in front of the bench facing the Judge. The Judge will inform you of the charge against you and ask whether you plead "guilty" or "not guilty" to the charge. If you do not fully understand the complaint, you may ask to have it explained or read to you in full. This is not the time to tell your side of the case; that will come later on whether your plea is "guilty" or "not guilty."

When you say "guilty," it is the same as saying: "I did violate the law as charged in the complaint." When you say "not guilty," it is the same as saying: "I did not violate the law as charged in the complaint." *If you are in doubt,* enter a plea of "not guilty." When you plead "guilty" an immediate hearing is held and after the complaining witness (often the arresting officer) has stated his case you will be given an opportunity to state any facts or extenuating circumstances concerning the case that you may desire the Court to know. You have admitted that you violated the law and all that is required is an informal hearing of all the circumstances before the Judge pronounces the penalty.

When you plead "not guilty" you are entitled to a formal trial to establish the facts, and in most instances this trial, too, will be held immediately unless it should require more time than the Court can take upon your first appearance, and in that event a day and hour will be set for the trial. In certain types of cases a bond may be required to guarantee your appearance at that time.

In every case there is a presumption of law that you are innocent of the charge until competent evidence proves otherwise, or you enter a plea of "guilty," admitting the charge. You are entitled to have a lawyer represent you, and he should be consulted immediately. When in doubt, see your lawyer first.

When your case comes to trial the burden of proof will be on the prosecution (City or State) whose witnesses will appear first and testify under oath as to the alleged facts. You (or your attorney) may question each witness upon the matter about which he has testified. When the prosecution has finished, you and your witnesses may testify as to your version of the charge. *After all the evidence has been heard,* you have the right to present your brief argument to the Court if you wish. The Judge will then decide, from the evidence properly heard in Court, whether you are guilty or not guilty of the offense charged against you. The complaint will be dismissed if he finds you not guilty; if he finds you guilty he will then pronounce the penalty the same as if your plea had been guilty.

The defendant is reminded that, if he is not satisfied with the decision rendered by this court, he has the right to appeal to the next highest court. Under Connecticut law, the defendant is given forty-eight hours to file an appeal in criminal action, and one week to file an appeal in most civil cases. When an appeal is taken in a criminal case the defendant is usually required to furnish a bond.

No fines are ever collected in the court room. You may pay the Police Officer at the desk and obtain a receipt from him.

We here strive to make a reality of the slogan "Equal Justice Under the Law." Neither the Court nor any officer gets a "percentage" of your fine. No officer has to write a certain number of tickets or make arrests to hold his job.

You are reminded that the Judge and Deputy Judge and other court officials represent the State of Connecticut. They are not the representatives of the Town of Winchester, the Board of Selectmen here nor of any political group.

The Judge has many duties — most of them not pleasant, but "We the People" make the laws for the protection of all and the Judge is sworn to enforce them fairly and without favor. Absolute quiet is required in the courtroom at all times as whispering and unnecessary noise makes it difficult to hear the testimony.

Through the courtesy of the Municipal Court of the City of Winsted.

HAROLD P. SULLIVAN, *Presiding Judge*
THEODORE VAILL, *Deputy Judge*

# Housing Act of 1950 Contains Many Important Features

THE Housing Act of 1950 became law with President Truman's signature on April 20, 1950. Several provisions in the Act will be of interest to local officials because of their effect upon future community development. Copies of the Act may be obtained from the Office of the Administrator, Housing and Home Finance Agency, Washington 25, D. C.

The new legislation includes (1) improvements in existing legislation in FHA Title I and Title II programs, (2) additional authorization to the Federal National Mortgage Association to purchase G.I.-guaranteed and FHA-insured loans, (3) provision for disposition of all temporary and permanent war and veterans' housing (4) amendments to the veterans' home-loan guarantee program under the Servicemen's Readjustment Act of 1944, and (5) provision for loans to educational institutions to finance needed dormitory and family-dwelling accommodations.

### Cooperative Housing Section

A major title, which proposed aid to families of moderate income through long-term loans at low interest rates for housing projects undertaken by cooperative ownership and other non-profit housing corporations, was stricken from the legislation by both the House and the Senate.

However, a new Section 213, Title II, replaces the former 207 FHA insurance program for cooperative housing. The more liberal mortgage insurance under this section is made available to veterans of World War II. Insured mortgages may range from 90 to 95% of estimated replacement cost, depending on the proportion of veteran members; and 40-year 4% loans are continued. Warren J. Lockwood has been named Assistant Commissioner in charge of FHA's Cooperative Housing Program, and is authorized to furnish technical advice and assistance in the organization of cooperatives, and in the planning, development, construction, and operation of such housing projects. The Act permits insurance up to $8,100 per unit ($8,550 for veterans) based on a $9,000 cost, or, if the need for larger family units necessitates higher cost, $1,800 per room ($1,900 for veterans) based on a $2,000 room cost.

### War and Veterans' Housing Disposal

An orderly method for the further operation and disposal of war and veterans' housing under federal jurisdiction is provided under Title II of the Act. The total amount of such housing is 363,200 units, of which 131,700 are permanent and 231,500 temporary. A total of 544,000 units has previously been disposed of through sale, transfer, removal, or other means.

John Taylor Egan, Commissioner of the Public Housing Administration, has explained that most of the permanent units will probably be sold to private ownership under priorities set up in the new legislation. In such sales, occupants, either individually or in cooperative groups, will have first opportunity to purchase, with veteran-occupants having first preference. Some of the permanent housing, however, may be transferred to local communities for use as low-rent public housing for low-income families. About 43,000 units in 146 projects have already been requested by local governing bodies for this purpose, and additional requests may be filed within 60 days following enactment of the Housing Act of 1950.

All projects transferred for use as low-rent housing under the law will be operated by local housing agencies under the terms of the United States Housing Act and will be exempt from real and personal property taxes levied by state and local governments. The projects, however, may make payments in lieu of taxes, not to exceed 10% of shelter rents, to state and local taxing bodies. After transfer of such projects, the local owning agency will pay to the Federal Government net project income over the succeeding 40 years. No annual federal contributions will be made to such projects, and only low-income families will be eligible for admission to them.

The new law also makes available the remaining 231,500 units of temporary war and veterans re-use housing for transfer without reimbursement to local communities and to schools and non-profit organizations now operating them, if application for tranfer is made by December 31, 1950. The organization requesting such transfer must pay the cost of any land transferred. The Federal Government will relinquish any right to future project revenues, and the local agency will have full responsibility for tenant selection, operation, and the eventual removal or disposal of the project. However, in tenant selection, first preference will be given families displaced by a low-rent housing or a slum-clearance project initiated after January 1947, and among such displaced families priority is granted to those of veterans and servicemen. Second preference will go to other families of veterans and servicemen.

The new Act also authorizes the Administrator of HHFA to make up to $300,000,000 in loans to educational institutions to help meet the acute housing problems of students and faculty. These loans have a maturity period of 40 years at an interest rate ranging between 2½ and 2¾%.

Other features of the Act liberalize G.I. loans for housing, increasing the percentage of guarantee from 50 to 60% of value, the amount of guarantee from $4,000 to $7,500 maximum, and the amortization period from 25 to 30 years. The VA is authorized to make direct loans with 4% interest rate to veterans up to $10,000 per loan if private financing at 4% is not available.

### FHA "608" Discontinued

Another important change in the new legislation is the discontinuance of FHA's Section 608. Most of the rental housing built in communities throughout the country since the war and virtually all of the garden apartment projects have been constructed with Section 608 insured mortgage financing. A liberalized Section 207 program has been substituted, whose intent is to encourage lower-priced rental units more suitable to the needs of families with children. However, $500,000,000 of insurance commitments for pending Section 608 applications (amounting to $660,000,000) has been authorized, giving the FHA an opportunity to be highly selective in its approval of proposed projects.

Larger and more moderate-priced housing for sale to moderate-income families will be encouraged under other sections of the act. A new section will make available mortgage insurance for low-cost home construction in suburban and outlying non-farm and rural areas. The housing problems of single persons, especially those 35 years of age and older, are also recognized, and dwelling units designed for occupancy by single persons will henceforth be constituted family units within the meaning of the Act.

## *Reserve Officers Get Training in Disaster-Relief Planning*

A TWO-WEEK training course in disaster-relief planning and operations is conducted nine months each year by the U. S. Naval School for Civil Engineer Corps Officers at Port Hueneme, Calif. No courses are given in February, September, and December. Classes convene the third Monday of each month in which they are held.

Approximately 200 officers of the Naval Reserve, both line and staff, have attended during the past 12 months. The Civil Engineer Corps Reserve officers are, in their civilian status, usually members of engineering firms or contractor organizations, or employees of the engineering sections of governmental bodies. Knowledge gained is of value to the student both as a Naval Reserve officer, and also as a civilian concerned with the security of his home community.

Several members of the March class attended a disaster drill conducted by the City of Los Angeles Citizens Emergency Corps, which demonstrated the capacity of the city to provide a maximum of protection for its citizens.

# Akron Solves a Sludge Problem

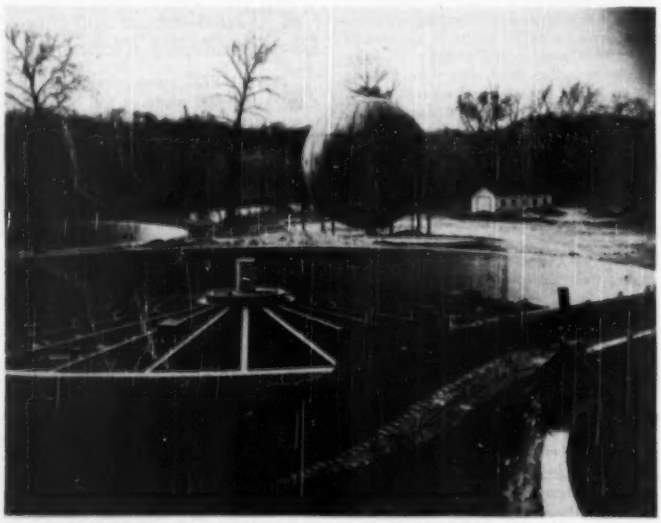
Sewer Engineer Luther La Rue, left, and Chief Engineer Wendell LaDue, right, inspect improvements.

**Sewage-treatment plant gets new digesters, elutriation tanks, vacuum filters, and sludge incinerators to correct an area-consuming, unsatisfactory sludge-lagooning disposal method**

SLUDGE and what to do with it has been the problem at Akron. And it has been a problem that has been growing increasingly intense and annoying for the past ten years. As tersely outlined by Akron's Chief Engineer of Water and Sewerage, Wendell R. LaDue, how do you digest sludge when you don't have enough digesters? How do you dewater sludge when you don't have enough drying beds? Where do you put the sludge when you run out of lagoon space? And what can you do with the sludge when it is so full of rubber wastes from Akron's giant tire industries that it doesn't make good fertilizer or soil conditioner?

From a stream-pollution standpoint, the plant doesn't do a bad job. It is a rugged, tough plant built in the early 1920's to a design reviewed by Metcalf & Eddy, Boston consulting engineers. It has to receive sewage with suspended solids averaging 335 ppm, of which a substantial portion is rubber waste, and with a BOD of 200 ppm. When the sewage arrives at the plant it is virtually devoid of oxygen, bordering on septicity. The plant uses an automatically cleaned Link-Belt bar screen to remove coarse solids. It has two Dorr detritus tanks that provide 15-minute detention to remove the grit. Detritus pumps draw off about 20% of the total flow from the bottom of these tanks and divert it to duplicate grit channels designed for a velocity of one foot per second and equipped with Chain Belt inclined conveyors for washing and elevating the grit so that it can be carted away.

The plant uses 24 Imhoff tanks to provide primary clarification. The tanks have settling compartments with a total capacity of 426,000 cubic feet, and digestion capacity in the lower compartments of 672,000 cubic feet. The plant also has 14 acres of trickling filters with stone beds 10 feet deep to provide oxidative treatment. These are divided into seven units and are designed to serve 1,850 people per acre-foot with a liquid flow of 2.36 mg per acre per day. Twelve humus tanks provide the final removal action. These tanks can provide 1½ hours of detention at the design flow of the plant.



Digesters like these are the heart of the new improvements at Akron. The Hortonsphere in the background will be used to store digester gas, to be used as a supplemental fuel in the sludge incinerator and also in the heat exchangers.

### Design Flow Too Low

The difficulty is that the design flow is only 33 mgd, whereas 50 mgd is more likely to be the quantity of domestic and industrial wastes that the city sends to the plant. Even with this overload, Luther La Rue, Sewer Engineer, and T. C. Schaetzle, Sr., Associate Engineer, manage to produce a rather creditable effluent, taking out 77% of the suspended solids and 80% of the BOD. If every city in the State of Ohio could produce equal purity in the liquid wastes sent to its neighbors downstream, health-authority officials would be encouraged. They would, of course, expect eventually to see a better degree of purification since much of the time in the summer the stream flow in the

Cuyahoga River is substantially equal to the effluent flow itself. But they would not be fearful that the river would present a health menace at that point.

### Sludge Difficulties

The trouble has been one of knowing what to do with the solids after they have been worried out of the sewage. In the first place, Imhoff tanks never have done too well in producing a thoroughly digested sludge. Moreover, the plant used open drying beds designed on a basis of 0.6 square foot per capita, and this soon showed itself to be uncomfortably inadequate. So the only alternative, short of a substantial capital investment, was that of sludge lagoons.

This has meant that the Akron plant is probably one of the most thoroughly lagooned in the country. Little lakes of sludge cluster around the plant in every conceivable low spot. Sludge also has been pumped to the tops of hills overlooking the plant itself. This sludge is only partially digested and still odorous. The lagoons themselves present a hazard, since on top they look as firm as a plowed field but underfoot the support is anything but solid.

During the WPA days, the city took a step towards solving this sludge problem by installing two digesters with fixed covers and Dorr equipment, but the great growth of Akron during and after the war soon overloaded even these relief units.

### Financial Structure Sound

While the problem was annoying, it could, of course, be solved. Akron, under the leadership of Chief Engineer Wendell R. LaDue, had established a sewerage-service charge some few years ago that has helped to make this service stand on its own feet and be less of a drain on the city's general fund. This has increased the borrowing capacity of the Department so that today remedial action can be undertaken with confidence that money will be available to pay for it.

As a consequence, Marvin L. Davis, Akron's Director of Service, who has over-all charge of all public works activities in this city, acting with full concurrence of Mayor Charles E. Slusser, retained the services of Havens and Emerson, Cleveland consulting engineers, to make a detailed study and recommendations on what action the city should take. In essence, the study recommended that the city plan for a sewage load of 67 mgd, over twice the capacity of the present plant, and prepare to change from the trickling filters to the activated-sludge type of treatment with its much smaller area requirements.

This long-range program has been adopted by the Department, and from an immediate standpoint, the city has taken those portions dealing with sludge handling for today's construction improvements.

### Sludge-Handling Studied

From the amount of sludge that had to be handled, vacuum filters appeared to be the sensible method of dewatering. And from the standpoint of economies in sludge conditioning, the elutriation process appeared to be a sound step prior to vacuum filtration. The decision had to be made then on whether the plant should have facilities to digest the sludge and then filter it, or to filter it raw. Also, it had to be decided whether to dispose of the filtered cake at a dumping point or to incinerate it into an inoffensive end product.

After detailed study, Havens and Emerson recommended that the sludge be digested so that the volume to be handled would be reduced and the odor-producing portions be destroyed; and that the dewatered sludge be incinerated so that the final ash to be dumped would be small and the nuisance factor would be inconsequential. Odor nuisance looms high in the minds of Akron officials because of the damage suits that have been brought against the city recently.

### New Digesters and Heat Exchangers

At present, the city has under construction a set of six sludge-digestion tanks, all with PFT floating covers. The new tanks will provide an effective volume of 895,000 cubic feet. This will supplement the existing digesters with 145,000 cubic feet and the digestion compartment of the Imhoff tanks to provide a total digestion capacity of 1,712,500 cubic feet, or about 5.2 cubic feet per capita for the design population of 330,000.

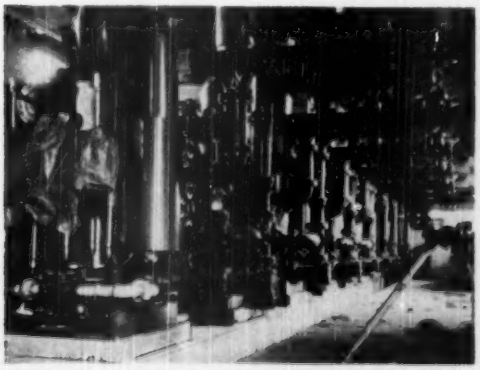
Digester gas is to be stored in a Chicago Bridge and Iron Hortonsphere capable of holding 80,000 cubic feet of gas. Eight PFT external heat exchangers are being installed to maintain optimum temperature in the digesters. This arrangement provides one heat exchanger for each digester, and two standbys.

Sludge from the digestion tanks will go to elutriation tanks to be washed in four volumes of water before being filtered. The elutriation tanks will use the customary counter-current elutriation method.

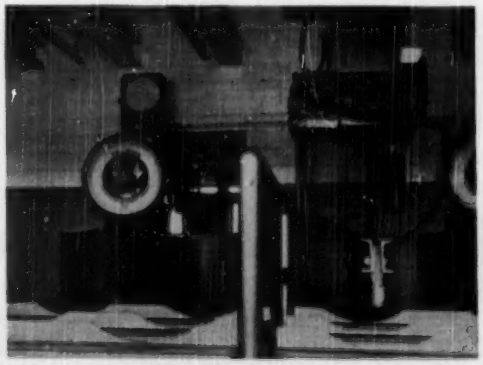
### Vacuum Filters and Incinerators

Vacuum filtration will take place in three Oliver filters with a fourth held for standby purposes. These filters are expected to work around the clock on a 6-day schedule and handle four pounds of dry solids per square foot per hour.

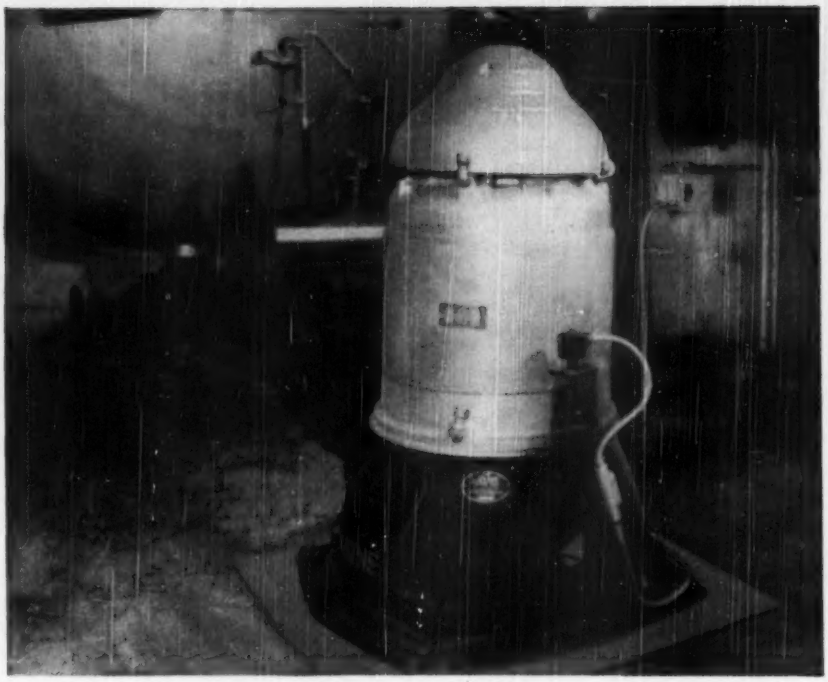
Final sludge disposal will take place in a sludge-incinerator installation using three Nichols Engineering and Research multiple-hearth burning units. A fourth will be held for standby;



**Eight external heat exchangers will bring the sludge to the optimum temperature for good digestion.**



**Chlorine will be handled in ton containers with this push-button-controlled hoist.**



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**LAYNE**

**WELL WATER SYSTEMS**

**VERTICAL TURBINE PUMPS**

here again the operation will be on a three-shift basis and a six-day week. The incinerator units have been designed on the basis of 40 pounds of dry solids per square foot of hearth area per day. All four furnaces will be served by a single stack. The sludge to be delivered to the incinerators will have about 30% solids and therefore may need supplemental fuel to maintain burning. This will be supplied by the gas from the digestion tanks.

These steps will handle the immediate problem of what to do with Akron's bountiful supply of sludge. At an appropriate time in the future, Akron will take steps to enlarge the plant and improve the purification. Even today, conditions during the summer months will be improved by the construction of chlorinating equipment able to apply 14 ppm of chlorine at the full design capacity of 67½ mgd. This has necessitated the remodeling of an existing structure to receive chlorine in ton containers through the use of monorail equipment and hoists.

Eventually, the city plans new, improved grit-removal equipment able to remove a grit not so heavily loaded with organic material. It will expect to install either comminutors or automatic bar screens with grinders to macerate the screenings so that they will be handled more easily in the balance of the plant. It expects to supply an aeration channel for preaeration preliminary to grease removal.

Other plans for plant enlargement contemplate relieving the Imhoff tanks and trickling filters by constructing an activated-sludge plant with a capacity of 37.5 mgd. Such a plant would include primary settling tanks for a 60-minute detention, aeration tanks designed for 6 hours' detention with 25% sludge return, and final settling tanks for 2-hour detention. At such time it would also be necessary to add six more sludge digestion tanks. The sludge filter-incinerator installation now under contract is designed for the ultimate load.

When these improvements are completed the big Akron plant will have both sludge handling and purification problems firmly in hand. The Cuyahoga River gives the city the water it uses some 30 miles upstream. The city then uses this water and returns it to the Cuyahoga. With treatment like this, the returned wastes will be in such shape that they will cause no trouble to the aquatic life in the river, nor to the use of the river that downstream neighbors would like to make of it.

# Yakima's New City Hall

FINANCED through cooperation with the Washington State Development Board, Yakima's new municipal building and jail was completed and opened for business on May 1. The state development group allocated $243,000 to the building project, whose total cost was $1,161,000. The City of Yakima is picking up the balance of the bill and will pay it off without a penny of bonded indebtedness—the money coming from capital surplus accrued during the war when construction was at a standstill.

The building, faced with smooth Roman-style brick, contains 68,845 square feet of floor space. The first-floor lobby and wings house the mayor and city commissioners, the city clerk and treasurer, as well as building, electrical and plumbing inspectors.

The rear of the ground floor contains the traffic, investigation and administrative units of the police department. The rear of the second floor is occupied by police detectives, the bureau of records, a traffic courtroom and show-up room.

On the second floor are also the elaborate health center with its treatment rooms, business offices, laboratory, X-ray room, and assembly room. The north side of the second floor is occupied by the city engineering department.

Third floor rear contains the jail quarters for male prisoners, including up-to-the-minute kitchen facilities. The fourth floor is exclusively for women prisoners. All in all, the jail can handle 130 prisoners.

The basement, which runs the full length and width of the building, contains a police pistol-range, gymnasium, locker rooms, and a dual boiler and air-conditioning plant.

**Exterior view of Yakima's new city hall and jail building nearing completion.**

Careful attention was given to the elaborate color scheme prevailing throughout the building, the texture of adjoining materials, the place of the sun in winter and summer, the type of occupancy and the distinctive atmosphere of every room in the building.

The architect was John W. Maloney and the general contractor for the job was the John Sellen Company of Seattle. T. S. Lord of Portland, Ore., was mechanical contractor, and the Best Electric Company of Yakima had the electrical contract.

## *"Eisenhower Scholarships" Established*

ESTABLISHMENT of the first group of "Eisenhower Scholarships" for aid to outstanding youths whose "potentialities for good citizenship" demand that they receive a college education was announced on April 29 by Dean Harry J. Carman of Columbia College.

The first group of Eisenhower scholars in Columbia College, the undergraduate liberal arts college for men of Columbia University, will be financed by the *Reader's Digest*. They will be selected from participants in the junior achievement program.

The successful candidates will join the 600 entering freshmen at Columbia College next September. It is estimated that about 125 members of the new freshman class will receive scholarships of varying amounts in the general scholarship program of the College. The scholarship program is supported by special awards by individual donors, alumni class funds, foundations, labor unions, corporations, and allocation of general University funds.

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# RYERSON STEEL

# Pontiac Establishes Combined Rubbish Collection Service

**Liberalized tax laws make the improvement possible without any increased assessments**

By GEORGE E. BEAN
*City Manager*
*Pontiac, Mich.*

THE CITY of Pontiac has incorporated a rubbish-collection and disposal service for its citizens without an increase in the 1950 tax rate. Until now, Pontiac has collected only garbage, leaving the disposal of rubbish and ashes to each householder or businessman. Prior to 1930, no rubbish collection had been provided, and during the depression, the imposition of the 15-mill tax limitation made it impossible for any additional services to be financed out of general tax revenues.

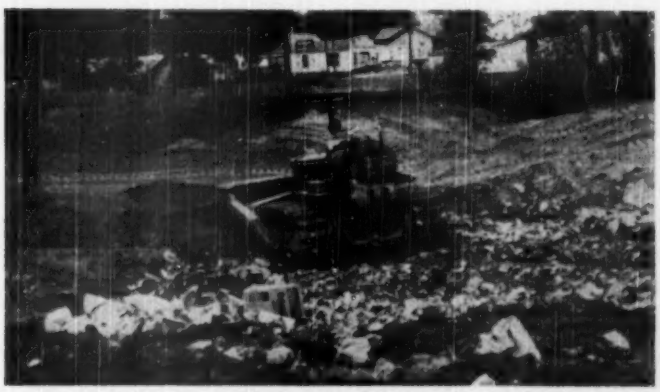
The removal of the tax limitation by the state legislature in 1948 permits greater flexibility in the preparation of Pontiac's budget, and better utilization of available tax money.

The 15-mill limitation was a control set on the total tax rate for operations in any community. Each governing unit could levy additional amounts for debt service or voted capital improvements. Under the limitation, the county, the schools, and the city shared the revenue raised for operational purposes. This division was made late in the year after the city's budget was adopted and over half spent. The city's share tended to be about 6 to 6½ mills. At the time, the city levied an extra heavy millage for debt service, so the total city tax levy was about $13.10 per thousand dollars of assessed valuation.

The tax-limitation removal raised our tax limit from a practical one of 6½ mills to a legal rate of 10 mills for operations. It also permits the city to do this at the start of its budget year. The city now sets aside more for the general fund operations and less for debt reductions, while the total remains at the same figure of $13.10 per thousand. This flexibility was impossible before. The city's plans for debt reduction still call for continued rapid reduction of the debt, and the change in levy does not affect the city's debt policy.

Rubbish collection is made possible with this greater flexibility by internal adjustments in budget appropriations, increased amounts for general operations, and decreased amounts for capital improvements and debt retirement.

This sanitary landfill will reclaim a waste lake area.

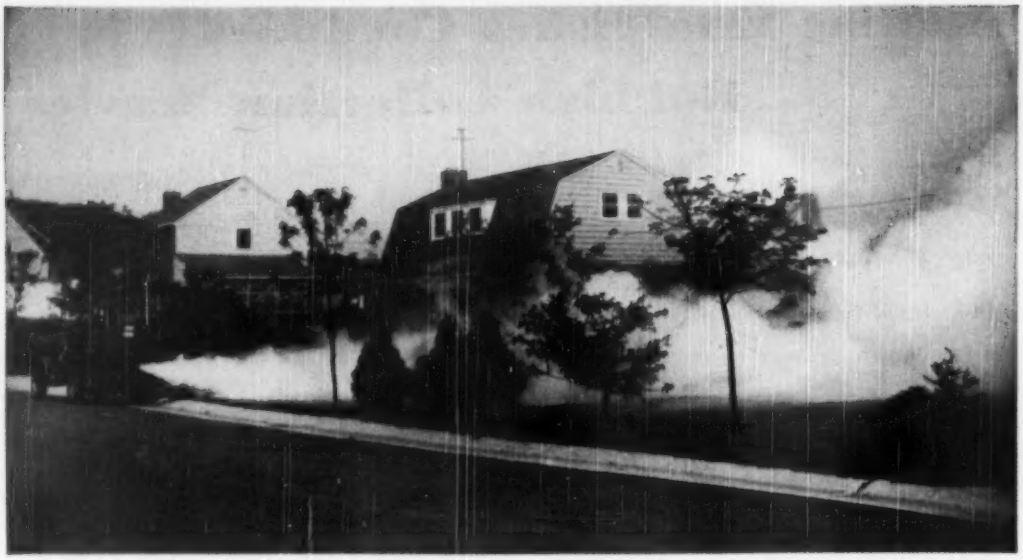


An Allis-Chalmers tractor packs the refuse and covers it with earth.

## Refuse Volumes Studied

Before there were any budget changes, a study was made to find out how much rubbish was involved, what equipment would be needed, and what the cost of collection might be. Information about other cities was found in the APWA publication, *Refuse Collection Practice*; material obtained from the Michigan Municipal League; several current magazine articles, and directly from neighboring cities. A local analysis was also made of the kind and amount of rubbish which would have to be removed in Pontiac.

On the basis of this detailed information, we discovered that rubbish collection and disposal could be provided in Pontiac at a cost of 69 cents per capita. This service provides for bi-weekly collections in residential areas and pick-ups three times a week in commercial districts. Rubbish is picked up from the



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curb if an alley is not available. Free collection is permitted each business establishment up to 9 cubic feet per day. Amounts in excess of this are charged for at the rate of 25 cents per cubic foot, which is based on quarterly estimates.

Householders must provide containers no larger than 1½ bushels to hold the rubbish. The city uses five 12-cubic-yard covered vehicles, about $33,000 worth of equipment, which includes three new Gar Wood Load Packers. The estimated annual cost of collection and disposal is $47,000, allowing $41,000 for labor (one driver and two pickers on each truck), $4,000 for equipment rental, and $2,000 towards the salary of the dump attendant.

Satisfactory disposal of the rubbish is quite simple, since Pontiac recently converted to the sanitary-landfill method of garbage disposal. For some time this same area, now an unsightly and unusable lake, can be used quite safely for both combustible and non-combustible rubbish. After the lake is filled, separation of combustible rubbish will be considered in order to prevent spontaneous combustion in the future.

Rubbish collections will be made separately, not only for accounting purposes, but because regular garbage routes and schedules are already well established. Rubbish collection will be somewhat experimental for a while, since there has not been enough experience to know that the plans work exactly as they have been prepared. There will probably be many points where adjustments will have to be made in the light of practical experience.

# Sanitary Landfill for Oneida

ONEIDA, N. Y. (population 10,000), has joined the ranks of cities which have adopted the sanitary landfill method of garbage disposal.

It seems that in Oneida the fire department spent as much time at the city dump as it did at fires: it was constantly getting reports about the smoke nuisance at the dump from town residents, and the farmers of the community were complaining about the terrific rat infestation.

**Dr. Charles A. Earl, Mayor of Oneida, and on the right, A. T. Ernenwein, Commissioner of Public Works.**

Finally, the city purchased a Caterpillar diesel D4 track-type tractor equipped with a Traxcavator. The unit digs the trench into which the refuse is dumped, and then covers it with a thick layer of dirt.

The fill operations are conducted on a 15-acre plot of land located in the outskirts of the city. The area has proven convenient both to public and private haulers.

Oneida, incidentally, not only averages 30 loads a day with its Traxcavator, but also uses the machine for the local flood-control project.

**This refuse truck has just finished dumping its load into the trench which has been dug by the Traxcavator . . .**

**. . . and the Traxcavator begins the cover-up operation.**

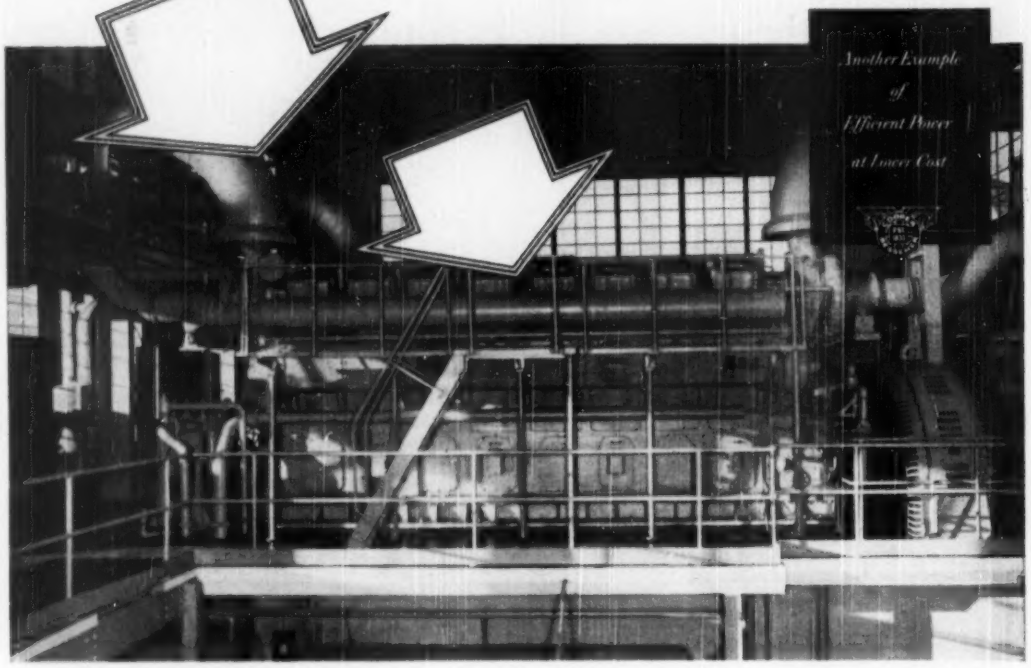
# Keynote at Yuma

## NEW ECONOMY IN THE COST OF POWER

In planning one of the most modern power plants of its kind, Arizona-Edison was quick to take advantage of the latest developments in engine design and performance. Cooper-Bessemer takes pride in not only introducing these developments but in furnishing the two supercharged gas-diesels that power this outstanding plant at Yuma, Arizona.

One of these engines is shown below—a well-proved type LS, featuring the new space-saving "V" design hence called the LSV. This supercharged, 16 cylinder gas-diesel not only achieves a new low in fuel consumption (6,500 B.T.U./hp/hr. or less) but its "V" design virtually doubles the power-to-space ratio. Still another feature is simple, fast conversion to 100% gas, spark-ignited operation . . . at will!

Weigh the immediate and continuing value of these advancements and you'll appreciate that new economy is indeed the keynote at Yuma. It is new economy that can be yours, too, with modern Cooper-Bessemers on the job.




● *Power for Arizona-Edison's new Yuma plant is supplied by two modern Cooper-Bessemer gas-diesels: a supercharged, 16 cylinder 3,300 hp type LSV engine (shown here) and a supercharged, 8 cylinder, 1650 hp in-line LS. Both engines are quickly convertible to spark-ignited operation on 100% gas fuel.*

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# Sound Revenue-Bond Financing
## *Takes a Team of Five*

By **ROBIE L. MITCHELL** *
*Mitchell and Pershing*
*Municipal Bond Attorneys*
*New York, N. Y.*

PROSPECTUS

*RELATING TO PUBLIC OFFERING OF*

$1,250,000

WATER SUPPLY SYSTEM REVENUE BONDS

ON FEBRUARY 14, 1950 AT 2 P.M., E.S.T.

*at the City Hall*

CITY OF MUSKEGON, MICHIGAN

**Making possible a project like this calls for the service of (1) the city's official board, (2) a preliminary engineering study, (3) a second engineering study to estimate revenue, (4) bond attorneys, (5) financial institutions.**

SUCCESSFUL revenue financing requires teamwork, particularly in the case of constructing an entirely new project. That team includes (1) the official board which is authorized by law to construct and operate the project and to issue revenue bonds to finance such construction, (2) the engineers who do the preliminary engineering work necessary to design the project and to estimate its cost and the expenses of operation and maintenance and thereafter supervise its construction and operation, (3) the engineers who make the necessary studies and surveys to estimate the revenues, (4) the bond attorneys who prepare any necessary legislation and the indenture under which the bonds are issued and secured, and (5) the bankers who assist in setting up the financial provisions of the indenture, prepare the offering prospectus and are responsible for marketing the bonds.

The functions and obligations of engineers are materially different in the case of a project financed by bonds payable from general taxes from what they are in the case of a project financed by bonds payable only from revenues. In the former case, the bondholders are not particularly concerned about the completion of the project or its efficient operation and management; they rely on the credit and taxing power of the municipality which issues the bonds. But in the case of revenue bonds it is the bondholders' money that builds the project and the only security they have for the repayment of that money and interest is the net revenue to be derived from the project.

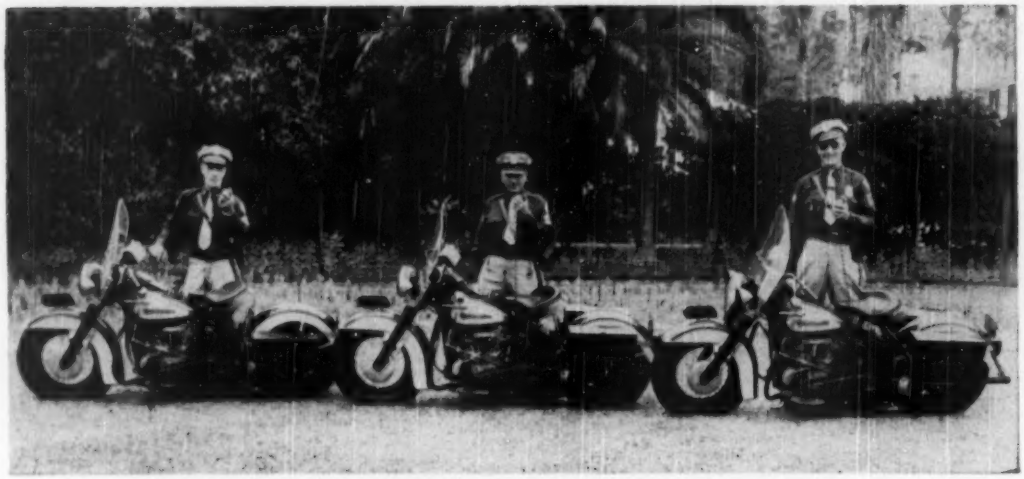
Let us assume then that there is an urgent public need for a new facility in some particular locality: for example, a new water-supply system, a sewage-treatment plant, an off-street parking facility, or a bridge, tunnel, or turnpike. This need is discussed by the local officials and civic clubs and organizations. It is found to be inexpedient or impossible legally to finance the project by general-obligation bonds. The question is then presented whether there is a satisfactory law under which revenue bonds can be issued. That is generally the time when someone, either a local official or an interested engineer or bond house, contacts the bond attorney. In many cases it is necessary to draft an entirely new revenue-bond act or amendments of the existing law.

Acting upon the assumption that there is or will be a satisfactory law under which the project can be constructed and financed, engineers are employed to do such preliminary work as may be necessary to prepare an engineering report. This is reviewed and studied not only by the officials who are responsible for the construction of the project but also by the bankers responsible for marketing the bonds. I believe that the bond attorney also ought to know a little something about the project he is helping to finance. The engineers then make any revisions in their report which may appear to them to be necessary or advisable to

* From an address at the annual meeting of the Maryland Association of Engineers, Baltimore, Md., Jan. 26, 1950.

# MORE HARLEY-DAVIDSONS FOR ORLANDO!

## New Hydra-Glide Models with 2-Way Radio Increase Effectiveness of Motorcycle Officers



The Orlando, Florida, Police Motorcycle Squad was recently increased to a total of 11 Harley-Davidsons by the addition of the 3 new motorcycles shown above. Each motorcycle is equipped with 2-way radio.

KEEPING step with police progress everywhere, Orlando, Florida, recently added three new Hydra-Glide Harley-Davidsons to its all-Harley-Davidson Motorcycle Squad. The motorcycles are equipped with latest model 2-way FM radios. After a period of testing, Lieutenant V. L. Rogers, Chief of Traffic, was so impressed that he said, "Two-way radio, to our way of thinking, is a new day 'must'. It triples the effectiveness of the motorcycle officer. Any number of incidents could be recited to prove this point." Your city also can benefit from the use of Harley-Davidson. These smooth, powerful motorcycles are built especially for police work. In addition to 2-way radio, they feature great maneuverability, high acceleration, road-hugging stability, oil-cushioned riding ease and effortless steering . . . advantages that help the mounted officer do his duty more efficiently, conveniently and comfortably. Accident rates are mounting daily, traffic control and law enforcement are straining police resources as never before. Call your dealer today and get more information about Harley-Davidson Police Motorcycles, Servi-Cars and Sidecars and their application to the needs of your city.

**HARLEY-DAVIDSON MOTOR COMPANY, Milwaukee 1, Wisconsin**

**HARLEY-DAVIDSON**

*MOTORCYCLES* POLICE BETTER TRAFFIC CONTROL *SERVI-CARS*

cover all questions raised by the officials, bankers, and attorneys, and submit their report in final form, many copies of which are needed for distribution in connection with the sale of the bonds.

### When It's a Traffic Facility

In the case of a traffic facility (bridge, tunnel, turnpike, and off-street parking facilities), separate engineers are employed to make traffic studies and prepare a traffic report containing their estimates of the traffic of each class which will use the facility, their recommendations as to the tolls or fees to be charged, their estimates of revenues, and the assumptions, if any, on which their estimates are based.

You will note that I have mentioned *separate* engineers for the traffic report. The investors practically demand this separation. They do not want the estimate of revenues to be influenced or affected in any way by the fact that the same engineers are to be employed to supervise the construction of the project. This separation of engineers does not appear necessary in the case of water or sewer revenue bonds. The number of users and the quantity of water used can be determined fairly accurately from existing records, and can be estimated fairly accurately for the future. But the report in such cases should be carefully checked by the bankers or by the financial advisers for the official board.

Engineers should bear in mind that these reports are very important in connection with the financing, and that they will be carefully reviewed by the bankers who market the bonds and by prospective purchasers from the bankers, particularly the institutional buyers. The reports should be readable, avoiding technical terms whenever possible—and should have some "pep" in them. It will help sell the bonds. When the engineer is thoroughly sold on the financial soundness of the project, let him help sell others. But let him remember that his reputation in financial circles is at stake.

### Enter the Bond Attorney

The amount of the bonds to be authorized must cover the over-all cost or the estimated cost of the project and interest for six months or a year thereafter. The bonds cannot be sold unless the estimated net revenues are sufficient to provide for paying interest and for retiring the bonds and to provide a liberal margin of safety. If the project appears to be financially sound, we then proceed to draft the authorizing resolution or indenture under which the bonds are to be issued and secured. The preparation of the preliminary draft of this long document is the function of the bond attorney, after the bankers have told him what the maturities of the bonds and the redemption provisions should be, and also any other financial provisions which they think should be incorporated in the document. Generally this document first appears in the form of printer's proofs, copies of which are sent to the official board and their engineers, attorneys, and financial officers; the engineers who have prepared the reports; the bankers or financial advisers for the board, and the trustee and its counsel. After all of these interested parties have studied the document and noted all of the provisions which they don't like or which they think don't fit the particular project or the way it should be financed or operated, we then have the all-important conference to harmonize the different viewpoints.

The final document is generally an indenture, with a bank or trust company acting as trustee, or a resolution, with a bank or trust company acting as fiscal agent and performing substantially the same functions as the trustee under an indenture. Bear in mind that the proceeds of the bonds and the revenues of the project are to be regarded as trust funds.

Let us consider the important provisions of one of these documents, which I will call the "indenture" for convenience. The indenture should maintain a proper balance between the provisions for the protection of the bondholders and the provisions relating to the powers and duties of the official board, and each indenture must be tailor-made to fit the particular project and the law under which the project is being financed.

In the preambles of the indenture there is set forth the background of the financing, including a brief description of the project, an estimate of cost, a reference to the law, a summary of the powers of the official board, and recitals as to the securing of any approvals necessary for its construction and the compliance with any conditions precedent to the issuance of the bonds. The form of the bonds initially issued is also set forth.

In a document as lengthy as one of these indentures we can avoid many ambiguities by devoting an article, usually the first, to definitions of certain words and terms used throughout the indenture, such as "trustee," "fiscal year," "consulting engineers," "cost," "current expenses," "principal underwriter," and "principal and interest requirements." A defined word or term must have the identical meaning wherever it is used. By "consulting engineers" we mean the engineers who design the project and supervise its construction. The term "principal underwriter" generally applies to the original purchaser of the bonds from the official board or to a representative thereof. Another important term is "principal and interest requirements," the amount required annually for paying interest and retiring the bonds by their stated maturity. It is connected with the coverage or margin of safety required for the issuance of additional bonds under an open-end indenture for extensions and improvements. It is also connected with the covenant as to the maintenance of rates and the reserve requirements.

### Provision for Additional Bonds

The next article sets forth such details as the amount, designation, date, maturities, and interest rate or maximum interest rate. If the bonds are to be issued to construct an entirely new project, it is important that the indenture be open-end—that is, not closed or limited to the bonds originally authorized, but open to permit the issuance of additional bonds if and to the extent necessary to complete the project. The revenues of three-quarters or nine-tenths of a toll bridge would not be very good security.

Most indentures are also open-end to permit the issuance of additional bonds in the future, on a parity with the initial issue, for necessary extensions and enlargements, provided the net revenues of the project and, in some cases, the estimated additional revenues to be received, are a certain percentage of the maximum principal and interest requirements of any succeeding fiscal year on account of the bonds then outstanding and the additional bonds to be issued. This power to issue additional bonds is important in the case of a municipal utility, as a city must be permitted to finance such utility to keep pace with the growth of the city and the demands upon the utility. One of the conditions to the issuance of such additional bonds is an engineering report and a certificate of the consulting engineers giving their estimate of the cost of the improvements and of the additional revenues to be received and additional expenses to be incurred.

Most revenue bonds are subject to redemption prior to their maturity. The times for calling the bonds, the redemption prices, and the manner and order of calling the bonds for redemption are set forth in a separate article of the indenture.

The proceeds of the bonds issued for a new project are generally deposited with the trustee under the indenture to the credit of a special fund called the Construction Fund. Disbursements are made from this fund to pay the cost of the project. The method of disbursement which I prefer is by requisition,

the Hotpoint Municipal
plan of GARBAGE REMOVAL

# A way for Progressive City Management to save money!

Garbage, as community officials all over the country know, is becoming an increasingly expensive municipal problem. The cost of garbage wagons, their maintenance and the workers to operate them, has been greatly intensified since the war. After shouldering this added expense, a community is still left with a malodorous, unsightly and dangerously unsanitary garbage collection system.

**The Hotpoint Municipal Plan Provides the Remedy!**

The Hotpoint Municipal Plan is the answer to this municipal garbage dilemma. A complete, factual presentation, based on experience and written specifically for municipal officials, is available for your study. It is the same presentation which has been made during the past few weeks at the request of many municipal governing bodies throughout the United States.

**With a Hotpoint Disposall® in every home, your community will enjoy these advantages:**

- *A convenient, new and modern garbage removal system.*
- *Health protection to the members of all families.*
- *Fly and rat pest reduction.*
- *Waste collection cost reduction.*
- *More digestion gas for use and sale.*
- *Elimination of food waste before it becomes garbage.*
- *Elimination of alley garbage can.*
- *Elimination of garbage collection problems.*
- *Elimination of garbage odors.*
- *True sanitation for your town.*

The Hotpoint Disposall is easy to install in any standard sink . . . convenient . . . safe . . . odorless and economical. Simple to operate . . . keeps kitchens, sinks and hands clean. Does not overload or clog sewer systems.

***And—it saves you money!***

Make your community "A City Without Garbage." Write today for a complete presentation of the Hotpoint Municipal Plan and banish forever the old-fashioned "can and wagon" garbage collection method.

**Hotpoint will gladly make a comprehensive presentation of the Hotpoint Municipal Plan to the interested parties of your city government. Write, wire or phone Hotpoint Disposall Department, 5600 West Taylor Street, Chicago 44, Illinois.**

Hotpoint Inc.
(A General Electric Affiliate)

*5600 West Taylor Street, Chicago 44, Illinois*

listing each item to be paid by amount, name of payee, and purpose, properly certified by the chairman of the official board or other appropriate official, and accompanied by a certificate of the consulting engineers approving the requisition.

The bond holders like to have audits made at frequent intervals during construction for their information and for the information of the official board and the consulting engineers. They also like to have the consulting engineers prepare progress reports monthly or quarterly during construction, containing comparisons between the actual times elapsed and contract costs and their original estimates of such times and costs.

### Watching the Property in Operation

The bankers are happiest at the completion of the project, as the revenues will then start coming in to pay off the bonds. But their connection with the property continues until the bonds are paid.

It is the duty of the official board to maintain and operate the project in an efficient and economical manner. It is impossible, however, to write provisions into an indenture which will at all times insure good management. Bad management is one of the principal fears of the holders of revenue bonds, as current expenses come ahead of debt service.

To guard against extravagance we incorporate in the article relating to revenues and funds the following provisions: the board covenants to maintain such rates as may be necessary to provide funds sufficient for paying current expenses, for making the required deposits to the credit of the sinking fund for principal and interest, and for creating certain reserves for such purposes. In adjusting rates, the board is required to get the recommendations of the consulting engineers. To prevent any favoritism, it is provided that the rates shall be uniform in each class and that no free use of the project shall be allowed, except in a very few instances.

### Adopting an Annual Budget

For the protection of the bondholders the expenses must be kept within the bounds of efficient and economical management. We therefore provide the machinery for the adoption of an annual budget.

The first step is the annual report of the consulting engineers, to be filled with the board some two or three months before the beginning of each fiscal year, setting forth their advices and recommendations as to:

1. the proper maintenance, repair, and operation of the project during the ensuing fiscal year, and an estimate of the amount of money necessary for such purposes;
2. any improvements, renewals and replacements which should be made during the ensuing fiscal year, and an estimate of the amount of money necessary for such purposes;
3. the amount to be deposited during such fiscal year to the credit of a reserve fund for unusual or extraordinary maintenance and repairs, replacements, etc.;
4. the insurance to be carried on the project;
5. as to any necessary or advisable revisions of the rates or charges; and
6. whether the project has been maintained in good repair and sound operating condition, and their estimate of the amount, if any, required to be expended to place the project in such condition and the details of such expenditures and the approximate time required therefor.

Copies of these reports are mailed to the trustee, the principal underwriter, and each bondholder who has filed his name and address with the proper official for such purpose. In this way, the bondholder can keep a fairly good check on their investment. In case the board at some future date should be inefficient or dishonest, it is the duty of the consulting engineers to warn them in this annual report. The board may threaten to fire the consulting engineers, but the engineers must not let any such threat impair their reputation.

The next step is the preparation of a preliminary budget, copies of which are mailed to the trustee and the principal underwriter, followed by a public hearing after published notice at which any bondholder may appear and present any objection he may have to the proposed budget. Thereafter the annual budget is adopted, which cannot exceed the preliminary budget, and the board is required to keep within that budget or any supplement or amendment thereof which can be adopted only with the approval of the consulting engineers.

If you can think of any better plan for keeping current expenses within proper bounds or of any improvement of the plan, I should be very happy to learn of it. I do not want any maximum on current expenses written into the indenture, either a fixed dollar amount of a percentage of the gross revenues. We have witnessed a depreciation in the purchasing power of the dollar and it is quite possible that we will see more of it. A percentage of the gross would likewise be unwise.

## Regional Development and Conservation —A Note of Warning

A WARNING that, unless we are careful, regional development jobs may be done in such a way as to make conditions much worse, not better, is voiced by the CIO Committee on Regional Development and Conservation in a new pamphlet, *The Magnificent Columbia.**

Discussing the need for an over-all plan for the Columbia River Valley, this CIO report points out that:

The big purpose of all this construction and development, all this planning, all this activity, is to provide good living and working conditions and real prosperity for all the people of the Columbia Valley, and to develop and conserve the resources of the Valley for the benefit of all the people of America.

But, says the report,

It can throw all this away in a short generation or two by producing the kind of big-city crowding which has taken place in the East and Midwest. That kind of crowding is bad for people, completely inhuman; it would be the stupid and tragic outcome of a bad development plan, or no plan at all, in the Northwest.

For many years, in program after program, produced by standing committees and national conventions, the CIO has called for the orderly dispersion of industry and the decentralization of the big cities. It has called for building up the small towns everywhere. . . .

It is imperative that policies be followed in regional development, including the location of dams and transmission lines, the location of reclamation projects, and the granting of contracts for the supply of water and electric power, which will bring about an even and orderly distribution of population throughout the region. . . .

Nothing is to be gained by the average man in any town by having it grow into the kind of huge sprawling industrial metropolis common in the East and Midwest. New industrial plants concentrated in one place do not necessarily, in and of themselves, mean more jobs; as California knows, they may simply attract big crowds from other places and lead to unemployment, the weakening of unions, the lowering of wages. . . .

It is always and everywhere in the interest of the average man . . . to work for a program which will give him elbow room, space for his children to play and grow up in, fresh air, sunlight, quiet, and healthful contact with nature. This is in the interest of people everywhere, whether they live in big cities, small towns, or open country. It is not a trivial matter, but is a case of the total environment in which people live out their lives.

* Available from the CIO Department of Education and Research, 718 Jackson Place, NW., Washington 6, D. C.

# The Town in Which We Want to Build a Plant

By S. B. WILLIAMS
*Director of Public Relations*
*Sylvania Electric Products Inc.*

**IN PRESENTING the paper here slightly abridged, before the Fifth Annual Conference of the Association of State Planning and Development agencies, on May 9, 1950, the author mentioned certain essentials for the particular business of his company — especially an adequate supply of intelligent female labor. His analysis of other determining factors applies so generally to progressive modern industries as to offer an excellent check list for communities seeking new factories.**

CHOOSING A TOWN is in some ways a lot like choosing a college for a youngster (that is, if the youngster hasn't already made up your mind for you). You may know of half a dozen or more colleges where the book-learning would be about equally good, but where there would be a wide difference in extra-curricular activities. For instance, if the youngster were a girl, you would in all probability want a place that was near a boy's college.

It's these "extra-curricular" offerings that can make one place more attractive than another as a plant location. The things we look for—the things we hope to find—have been broken down into three classifications: economic, political, and social. Because there is some overlapping, some factors may have been put in one category when they could have been put elsewhere.

## I. Economic

SIZE OF TOWN.—While we operate mostly in small plants in small towns, there is a limit in smallness below which, experience has taught us, one should not go. The operation, for instance, should be of such a size that it can afford the advantages of efficient and modern equipment, because its output must be competitive. Obviously, the size would vary with the product and the method of manufacture. A high component of hand labor as against automatic machine operations would weigh heavily in size of community.

Ordinarily we would consider a community with a population between 15,000 and 25,000 as about right for our small plants. Such a community, generally speaking, would be able to supply an adequate labor force without placing an undue burden of employment responsibility upon us.

It is important, also, that the community be of a size that our wage scale would not be an upsetting factor to community economy or equilibrium. We are careful always to investigate wage rates, wage policies, holidays, vacations, working conditions, benefit programs, and general labor relations. We have our own standards elsewhere to protect.

Our program of decentralization is not based on seeking places with low labor rates. We have no intention of exploiting small-town labor. Exploitation, of such a nature, we feel would, sooner or later, boomerang.

Electric service must be steady, with good voltage and the lines so built that the chance of outages from sleet or lightning storms is minimized.

Railroads and other forms of transportation with good service must be available. It should not be necessary to make frequent transshipments to take goods to market. Highways should be important links and kept open under all weather conditions.

TAXES.—Considerable emphasis has been placed on low taxes and upon tax inducements for a period of years. We feel that taxes are the only way a community has of raising money to pay for necessary municipal expenses. We want to pay our share the same as anybody else, but we want to be sure that the taxes are fair. If we don't pay our share someone else has to pay it. Perhaps at a later date we, too, would be paying a part of some one else's taxes, and that we wouldn't like.

SAFETY AND SANITATION.—It is important that the town have a good record as regards floods, fire, and health. A good fire department with good equipment is essential, because while we can insure ourselves against loss in buildings and facilities, we cannot insure against lost business and lost employment for our people.

While we provide plant medical and nurse service, we like to be sure that our employees have a good hospital available for themselves and their families. And because nothing is more important than community health, we study the sewage disposal conditions.

HOUSING.—Since we always have to bring in a number of technicians and their families, we make sure that suitable housing is available at costs they can afford.

WEATHER.—In certain of our operations high humidity slows down production and increases the shrinkage loss. We do not want to be put to the extra expense of installing air-conditioning to serve for a few days a year, so we look for a low maximum relative humidity.

SITE ECONOMICS.—Delivery costs can eat up all the profits on low-margin lines, which many of ours are. It is therefore, necessary for us to make a careful investigation of delivery costs, not only of our finished product, but of our raw materials and components as well. For instance, is the site on a railroad siding? Is it on a good highway?

Also we frequently use a plant site for a warehouse as well. In those instances we must make certain that this would be economical and practical. Is it close enough to gas and power supply to warrant extension by the local utility?

## II. Political

We want a local government that is alert, progressive, understanding, clean, and business-like. We like to see balanced budgets and a comparative low debt per capita, yet with a reputation for good municipal facilities.

Our investigations, therefore, lead us to making an appraisal of the kind of people who are in the city government either by election or by appointment. If the men running the local government have the reputation of being business-like, then we would expect taxes to be low by comparison. We would also expect to find good schools, streets, sewers, water systems, and police and fire departments.

While we expect to pay our share of the taxes, we cannot afford to pay for waste. We are favorably impressed with places that have planning boards, because they connote an orderliness to the growth of the community in terms of its facilities. We don't accept them, however, until we have made an investigation, because we have found city planning that was keeping the community's nose too close to the grindstone. School expenditures, for instance, for buildings, grounds and athletic fields, at the expense of a teaching budget. Or streets too far in advance of growth or requirement.

CALIBER OF PEOPLE.—Of greatest importance is the potential intelligence of the community. Do the people pos-

25 mgd turbine-driven centrifugal pump at Cincinnati Water Works

# More of the Same For Cincinnati!

## *Worthington Pumps Are the Repeated Choice for City Plants*

Worthington's career at the Cincinnati Water Works began 40 years ago with the installation of seven 25 mgd vertical triple expansion pumping engines at the Eastern Hills station.

In 1934, one 25 mgd turbine-driven centrifugal pump was installed at the same station. And in 1940, four 14.9 mgd vertical pumps were installed at the California Raw Water Station.

So successful has been the operation of these Worthington pumps that Worthington was the natural choice for the pumps at the new Tennyson Pumping Station.

It is interesting to note that the seven original pumps are still in excellent operating condition. However, such has been the technical advancement in pumping equipment, that the pump installed in 1934 develops 2.7 greater water horsepower than each of the original seven, yet weighs one-sixth as much and costs only one-fourth as much.

| PUMPS | RATED | DRIVE |
|---|---|---|
| **ORIGINAL—EASTERN HILLS MAIN STATION** | | |
| 7 triple-expansion reciprocating | 25 mgd at 175 ft TDH | 25 rpm steam engine |
| **1934—EASTERN HILLS MAIN STATION** | | |
| 1 two-stage centrifugal | 25 mgd at 470 ft TDH | 2500 hp steam turbine |
| **1940—RAW WATER** | | |
| 4 single-stage 18 in. vertical | 14.9 mgd at 157 ft TDH | 500 hp 720 rpm motor |
| **1950—TENNYSON STATION CENTRAL SERVICE** | | |
| 3 single-stage centrifugal | 25 mgd at 200 ft TDH | 1250 hp 720 rpm motor |
| **1950—TENNYSON STATION EASTERN HILLS SERVICE** | | |
| 2 two-stage centrifugal | 25 mgd at 500 ft TDH | 3000 hp 720 rpm motor |
| **1950—TENNYSON STATION EASTERN HILLS SERVICE** | | |
| 1 two-stage centrifugal | 20 mgd at 500 ft TDH | 2500 hp 720 rpm motor |

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**the complete line . . . the top engineering**

- CENTRIFUGAL PUMPS
- DIESEL & GAS & SEWAGE GAS ENGINES, DUAL FUEL ENGINES
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**WORTHINGTON**

*Worthington engineers—members of a world-wide staff—will help you select the equipment that will prove to you there's more worth in Worthington. Worthington Pump and Machinery Corporation, Harrison, New Jersey*

sess the ability to grow in terms of added responsibility? While there will always be certain technical skills that we will import, we expect the community to provide not only the hourly-wage group but eventually the line supervisory group as well. We, therefore, must have people whom we can upgrade.

CULTURE.—A community must have a solid cultural core. It must be alert and interested, even if handicapped by distance from large centers. If the cultural growth is static, or if it is focused largely in the past, we find that the people are dissatisfied in an unhealthy way. They are frustrated and lack ambition and initiative.

RECREATIONAL FACILITIES. — Employees, we feel, should have wholesome recreation available for their leisure time, such as golf, tennis, baseball, softball, swimming, skating, bowling, fishing, and hunting. The more they can enjoy at a cost they can afford, the less time will they spend in undesirable places. In this same category is the opportunity to grow things. After all, 40 hours a week allows for considerable leisure time that can be put to good use, especially by men with families.

PLACES OF CONGREGATION.—We find there is value to community centers, Y.M.C.A.'s, parks and similar places where people can play, or visit together, or take part in community life. We encourage civic spirit. We want our employees to feel that they are a part of the place in which they work and live.

HOTELS.—Does the community have a good hotel where visitors and sales people can comfortably stay? Does it have one or more good restaurants? Towns without such accommodations are shunned by outsiders and even by company people from other places. Executives spend as little time there as they possibly can.

SCHOOLS.—Most of our people are high-school graduates. While the work isn't exacting for the most part, we expect a high level of intelligence. Unless there is a good school system and a fairly large percentage of the children go to high school, we find our available labor less satisfactory.

STORES.—Good stores are a sign of the kind of living standards that we want our employees to enjoy. The supervisory and technical help that we take to a new place would be unhappy with poor shopping places, and we would not be able to hold them.

NEWSPAPERS.—One of the first things we study is the local paper. Does it appear to do a fair job of keeping people informed, especially on local and near-by news? If it does, then we know the people are interested in their community. A newspaper frequently is a pretty good barometer of public spirit and morale.

HOUSING.—What are the standards? Are the houses new or very old? Are houses available for technical people we need to bring in? Are they the kind that young, well-educated people would want to live in? Are there real-estate developments that would attract such people?

Houses that lack modern conveniences, that are hard to make attractive, that take a lot of work with little to show for it, that lack charm, are not conducive to good employee morale.

LIBRARY. — These same people need certain cultural facilities, particularly books. Is the library as well-equipped as could be expected for a town of that size? Is it well patronized? Does it or the schools provide for adult education?

CLEANLINESS, POLICE RECORD, AND HEALTH RECORD.—I have grouped these three because they are a measure of the character of the people. A clean city with a good police and health record is attractive to employees with families. Better skills and more ambition are apt to be found there. The record of job absenteeism can be expected to be lower. A better neighborhood spirit will exist. The plants and grounds will be better maintained and have better housekeeping.

LOCAL SPIRIT.—We want to settle in places where the townspeople are aggressive in doing things for their community. The atmosphere is much more healthy when the town is not forever holding back waiting for the company to provide for this or that. People appreciate and treasure more the things they do for themselves than they do the things they receive as a gift from "Lady Bountiful." We want always to do our part, but only the part that any good citizen would take.

FAMILY.—Finally, is the town a good place in which to bring up a family? That's the really important social question. When employees feel that the children have a healthful place in which to grow up—good schools, plenty of opportunity for the right kind of play, safe streets, good health record, good playmates, good moral record, right outlook on life—they feel little inclination to move on. They become better and steadier at their jobs.

Thus, there is an important social aspect to city planning which will be of equal importance with facilities planning in enticing outside industry to any community. A place that is socially healthy generally offers an employer better workmanship, greater productivity, better understanding, greater mutuality of interest.

*That is the town, other things being equal, in which we want to build and extend our operations.*

## *Committee to Study the Surfacing of Play Areas*

ONE OF the most troublesome problems of park, recreation, and school authorities—the surfacing of recreation areas—is to be given intensive study by a joint committee of the American Institute of Park Executives, American Recreation Society, and National Recreation Association.

Although many methods and materials have been used in attempting to develop a satisfactory surface for recreation, and surfacing experiments are still being carried on, relatively little has been written on it in recent years.

The members of the new committee are:

*For the Institute—*
Daniel L. Flaherty, Assistant General Superintendent, Chicago Park District
H. S. Wagner, Director-Secretary, Akron Metropolitan Park District

*For the Society—*
F. Elwood Allen, F. E. Allen Associates, New York City
Arno Gustavson, Director of Recreation, Berkeley, California

*For the Association—*
William H. Bowels, Superintendent of Construction and Maintenance, Union County (N.J.) Park Commission, Elizabeth, New Jersey
Tom Jones, Director, Division of Design and Construction, Department of Public Properties, Cleveland, Ohio

George D. Butler, of the National Recreation Association staff, is serving as committee chairman.

It is the purpose of the surfacing committee to collect information as to surfacing methods and materials, to appraise their effectiveness insofar as possible and to encourage experimentation in this field. The results of its findings will undoubtedly be made available in published form.

Park and recreation authorities are requested to send to George D. Butler, at the National Recreation Association, 315 Fourth Ave., New York, N. Y., or to another member of the committee:

(1) information about their experience with various surfaces—their effectiveness and shortcomings;

(2) reports of surfacing experiments at recreation areas; and

(3) suggestions as to companies that might be interested in undertaking research in this field.

# What features do you need in a Fire Hydrant?

1. Ample water supply without perceptible pressure loss?
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5. Positive, *automatic* flushing of multiple drains with each operation of hydrant?

*ALL OF THESE* requirements, as well as other equally important features, are incorporated in modern Darling hydrants . . . to give you a big plus value in extra protection, service life and over-all operating economy.

***ASK FOR BULLETIN 4410***—Bulletin 4410 gives complete information on Darling's advanced features. It also describes Darling hydrants of many different types designed to best meet varying requirements while offering the extra economy of interchangeable parts.

## DARLING VALVE & MANUFACTURING CO.

**WILLIAMSPORT 10, PA.**

# School and Hospital Water Use

**Study shows 5 to 10 gallons per person per day in grade schools; 15 to 20 gallons in high schools, and 125 to 225 gallons in hospitals**

By W. H. JOLLIE
*Graduate Student*
*University of Illinois*

HOW much water does a child use at school each day? How much is used on behalf of a hospital patient in a 24-hour period? Simple questions perhaps. But questions whose answers are not particularly simple or clear. Yet the answers are needed for such important works as the school construction programs and the government-aided hospital programs that are now under way across the country.

To learn the answer, the writer made an investigation as part of his graduate study at the University of Illinois. This investigation covered typical schools and hospitals located conveniently enough to allow first-hand study. The data presented are taken from six Central Illinois municipalities ranging in population from 2,000 to 25,000. The records of water use were obtained from the offices of privately owned water companies and municipal water departments. School-attendance data were obtained from superintendents' offices, while hospital-occupancy data were obtained from business managers.

In discussing many uses of water, its physical, chemical, and bacteriological quality, the season of the year, water rates, availability of sewerage facilities, and other factors have an influence on the volume used. However, the author has concluded that these provide only a negligible influence in hospitals and schools. The effect of waste, leaks, and manner of operation overshadow the other matters. Basically, the water demand by schools and hospitals is independent of its characteristics, so long as it is potable.

The enrollment at the different schools studied ranged from 60 to 800. Data shown are largely for portions of the 1948-49 school year.

As a spot check, the author made a special study of volumes used over current short periods. Weekly meter readings were made at five of the schools for 10 consecutive weeks. A definite per-capita short-time usage was determined that could be compared with values calculated for a longer period, using data from typical records, and reasonable agreement was demonstrated.

In order to arrive at an average water-usage value for each school as nearly correct as possible, it was necessary to employ the smallest metered periods and school-attendance-record periods available. Data shown for the Lincoln (Ill.) schools are an average of monthly per capita usage; for the Champaign and Urbana schools a quarterly average, while for the Tuscola and Villa Grove schools it was necessary to resort to the records covering the entire school year.

## Week-end Consumption

The calculations do not allow for water used Saturdays, Sundays or other days in which pupils were not actually in school. School officials estimated the amount of water used over week-ends in varying proportions from negligible to as much as 10 or 12%, depending on the manner of operation of the school utilities.

One of the leading factors in the use of water at schools is in the automatic flushing of urinals. Some reported adjustment for flushing once or twice an hour, and others as often as every five or ten minutes. In smaller schools the janitor often stated that he turned them off each night, or at least on week-ends, while in the larger schools it is more customary to allow the flushing to continue at the set rate whether or not school is in session. The schools marked with an "x" in Column B of Table I reported a continuous flushing schedule. It was not possible to determine this fact in every case. Other leading factors in the use of water, which were noted in particular, were leaks in old plumbing and drinking fountains allowed to run continuously.

In talking with hospital officials, it was determined that their records were most easily given on a fiscal-year basis, usually from July 1st to June 30th. The hospitals visited range in rated ca-

**Table I—Daily Per Capita Water Use in Schools**

| School | City | Size of Schools | Spec. Study Gallons | Record Calc. Gallons | Plumbing Fixtures Per 100 Pupils A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|
| Adams | Lincoln | 65 | ... | 7 7 | 9 2 | 9 2 | 9 2 | 0 | 1 6 | No |
| No. Ward | Tuscola | 110 | ... | 5 3 | 8 2 | 7 3 | 1 8 | 0 | 1 8 | No |
| Lincoln | Urbana | 240 | 7 4 | 5 2 | 4 5 | 7 4 | 2 5 | 0 | 1 6 | No |
| Jefferson | Lincoln | 300 | ... | 4 4 | 5 3 | 2 7 | 1 3 | 0 | 2 0 | Yes |
| So. Ward | Tuscola | 430 | ... | 6 3 | 6 0 | 5 6x | 2 8 | 1 2 | 0 9 | No |
| Leal | Urbana | 450 | 7 5 | 9 9 | 6 9 | 8 6 | 2 9 | 0 | 2 4 | No |
| Central | Lincoln | 540 | ... | 20 0 | 6 1 | 3 3 | 2 2 | 0 4 | 0 9 | No |
| Comm. High | Villa Grove | 190 | ... | 12 4 | 10 0 | 7 8 | 5 6 | 4 4 | 3 3 | No |
| Comm. High | Tuscola | 210 | ... | 24 1 | 6 2 | 3 8 | 2 9 | 3 3 | 1 4 | Yes |
| High | Urbana | 570 | 17 4 | 17 7 | 4 4 | 8 1 | 2 5 | 2 5 | 1 4 | Yes P |
| Comm. High | Lincoln | 590 | ... | 18 0 | 4 4 | 2 7 | 2 0 | 2 5 | 2 0 | No |
| High | Champaign | 680 | 17 1 | 21 8 | 4 8 | 4 7x | 3 0 | 1 7 | 0 9 | Yes P |
| Jr. High | Champaign | 800 | 17 8 | ... | 4 4 | 5 7x | 2 8 | 2 8 | 1 4 | Yes |

NOTES: The size of the school is shown to the nearest 10 pupils.
Column 4 shows the per capita water use during the 10-week period in which the author made regular meter readings.
Column 5 shows the per capita water use as computed from 1948-49 records.
The "x" in column B indicates the schools using the uninterrupted urinal flushing schedule.
P in the last column indicates a swimming pool.
A—water closets; B—urinals; C—lavatories; D—showers; E—drinking fountains; F—school cafeteria.

**Table II—Water Use in Hospitals**

| Hospital | City | Rated Capacity | Bassinettes Newborn | % Occupancy | Patient Days Per Year | Newborn Days Per Year | Water Used Per Patient Day A | B |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Gallons | |
| Methodist Memorial | Mattoon | 50 | 16 | 83 5 | 15,244 | 3,602 | 114 | 93 |
| Jarmon Memorial | Tuscola | 55 | 8 | 76 4 | 12,263 | 2,209 | 125 | 106 |
| St. Clara's | Lincoln | 60 | 9 | 79 5 | 19,112 | 1,501 | 228 | 210 |
| Deaconess | Lincoln | 65 | 15 | 81 5 | .... | .... | 127 | ... |
| Carle | Urbana | 70 | 12 | 85 7 | 21,462 | 3,166 | 235 | 197 |
| Mercy | Urbana | 108 | 19 | 79 1 | 36,643 | 6,590 | 200 | 164 |
| McKinley U. of Ill. | Urbana | 125 | 0 | 43 0 | 9,025 | 0 | 262 | ... |

NOTES: Mercy Hospital has recently been enlarged to 125-bed capacity.
A large doctor's clinic is housed in the Carle Hospital, thereby rendering its water use somewhat unrepresentative.
The Deaconess Hospital reported an average occupancy of about 53 beds; the figure used in making the calculation of the water used.
The rated capacity does not include the bassinettes for the newborn. The percent occupancy figure is exclusive of newborn days.
A—Water used per patient day exclusive of newborn days.
B—Water used per patient day inclusive of newborn days.

COMING!

# FOOD WASTE DISPOSERS REQUIRED BY LAW!

**Within the next few years, more and more city officials will earn the thanks of their communities by taking the lead in abolishing garbage . . . and the unpleasantness and the health hazards that go with garbage. People want the food waste disposer—not just for themselves, but for the HOMES NEXT DOOR and across the street; they don't want garbage at their own back doors . . . OR ACROSS THE ALLEY. Forward-thinking officials now sponsoring ordinances requiring this modern, sanitary method of eliminating garbage in all new construction are pioneers of a new era.**

From the viewpoint of health, efficiency, and service-free operation, consider these advantages of the Youngstown Kitchens Food Waste Disposer:

**1** Food waste can be fed in *continuously*. No waiting for a load to be shredded and flushed with the Youngstown Disposer.

**2** Youngstown rotary shredder turns in opposite direction each time switch is turned on, doubling life of cutting edges.

**3** Direction of water swirl reverses each time switch is turned on, for *complete self-flushing*. Super-hard, chrome-plated steel shredders stay sharp and bright.

The streets, alleys, and back doors of this new development will speak well of its residents—and of the builder, who recognized the popular appeal of a garbageless community. Alert city officials can accomplish this same garbageless, healthier, more pleasant standard of living on a *city-wide* basis!

Youngstown Kitchens
FOOD WASTE DISPOSER

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pacity from 50 to 125 beds, excluding bassinettes for the newborn babies. Since hospital occupancy data are based on a fiscal year and there are no nonfunctioning days, the calculations for the unit use of water at a hospital is less involved than it is for schools. Table II summarizes the data collected on the use of water by hospitals.

The data for grade schools show a minimum per capita use for the school of about 300 pupils. A slight rise in per capita use is shown as the size of the school decreases and a marked rise as the size increases. There is no apparent correlation between water use and the number of plumbing fixtures in the buildings. A matter of interest was noted in the data for the Adams School. During the first half of the year 1948-49, the water use was over 25 gallons per capita per day, while it was only 7.7 gallons during the last half. Obviously some change had been made, but it was not ascertainable. The high-school data are more consistent than that for the grade schools and no comment is required.

From a study of Tables I and II, it seems reasonable to state that the use of water by a grade school should fall within the limits of 5 to 10 gallons per person per day; that by a high school, 15 to 20 gallons per person per day; and by a hospital 125 to 225 gallons per patient per day. If the water use at other such institutions of similar size varies greatly from these limits, a need for a determination of meter accuracy or a leakage problem seems warranted.

Of all the persons interviewed in the collection of these data, none gave evidence of knowledge of the volumes of water used by either type of institution. As previously stated, these may be among the largest customers for a water works. Where the institutions must pay for the water this expense may be a major one. It seems logical to suggest to both water works and institution officials—notwithstanding their already crowded business hours—that they become acquainted with this phase of water use which is their responsibility.

Nearly every person interviewed in the search for these data gave freely of his or her time and information. The author wishes to acknowledge with thanks the help of water works, school, and hospital officials in Champaign, Lincoln, Mattoon, Tuscola, Urbana, and Villa Grove.

# Nationwide Sewage Treatment—How It Looks Today

AS THE Bureau of the Census counts noses to see how large our country is, so also does the U. S. Public Health Service count sewerage facilities to see how sanitary our cities are. Latest official summary has recently been presented and analyzed by John R. Thoman, sanitary engineer, Environmental Health Center, Cincinnati, Ohio, as Supplement 213, *Public Health Reports*.

The count recorded in this summary showed that in 1945, the year of the sewerage census, more than 8,900 of the nation's communities had sewer systems serving almost 75,000,000 people, or 54% of the total population. Based on the 1940 census, these systems served communities having a population of 82,000,000. Of this group 91.1% were connected to sewer systems.

Of this connected group, 43.0% discharged raw sewage and 57.0% used treatment plants. Of the latter group, about half have plants equipped to provide treatment more thorough than plain settling.

The summary counted 5,786 treatment plants serving 5,480 communities. In Arizona, Illinois, Maryland, Nevada, New Mexico, Texas, and Wisconsin, the population served by treatment exceeds 90% of the total population served by sewers. If one considers plants providing treatment less than plain sedimentation, 67.2% of the population served by sewers uses treatment facilities. This national average is exceeded in 22 states.

The use of treatment facilities has progressed most in the East-North Central states, consisting of Ohio, Indiana, Illinois, Michigan, and Wisconsin. Sewage from more than 81% of the population connected to sewers in these states is treated. This population comprises 19.4% of the total U. S. population connected to sewers and is almost one-third of the total population connected to treatment. These states have 16.4% of the total number of treatment plants in the country. Almost 40% of the nation's plants providing treatment beyond plain settling are located here.

Substantially all places with a population over 10,000 have sewer systems. Less than 18% of the communities under 1,000 are similarly served. Over 3,800 communities have installed sewer systems since 1930, an increase of approximately 75%; however, the corresponding increase in population served is much smaller. Approximately 79% of the communities use separate-type sewers. Combined sewers are used in 16.9%, and 4.3% have both. 92.4% of the communities are served by municipally owned sewer systems. Pennsylvania has the largest number of privately owned systems. The Southern states have the highest percentage.

The record shows 2,829 primary treatment plants serving 17,000,000 people. Septic tanks and Imhoff tanks comprise 83.5% of these, but serve only 36% of the population.

It shows further that there are 2,897 plants using treatment more thorough than plain settling. These plants serve over 25,000,000 persons. Activated-sludge treatment is used in 324 plants serving 11,500,000 persons. Trickling filters are used in 1,581 plants serving about 9,500,000 persons. Chemical treatment is available in 197 plants serving over 5,000,000 people.

Turning to sludge processing, the Imhoff tank is used for digestion at 2,409 plants, with septic tanks being used at 1,695 plants. Separate digestion tanks are used at 1,372 plants, and multi-stage digestion at 108 plants. Imhoff tanks are used predominantly in communities between 500 and 5,000 population. Septic tanks are used in plants serving less than 500 people.

Raw undigested sludge is disposed of directly in 32 plants. At one plant the liquid sludge is incinerated while at others the sludge is dried for fertilizer or incinerated.

Sludge is dewatered on drying beds at 3,764 plants. Lagoons are used in 100 plants; mechanical methods such as vacuum filters are in use at 102 plants. Over 1,700 plants list no sludge-dewatering facilities or no organized method in use. Some 38 plants discharge sludge to water courses, to the ocean, or on farm lands, or pump it to other plants. Elutriation prior to dewatering is reported at 10 plants. At nine of these, vacuum filters are used for the dewatering of the elutriated sludge.

The final effluent is chlorinated in 1,262 plants serving 16,000,000 people. New York and New Jersey have the largest number of plants so equipped. Grit-removal facilities are included in 765 treatment plants, serving almost 28,000,000 people. Over half the plants in the larger communities have such facilities. It is common to find grit-removal facilities in plants receiving only sanitary sewage. Grease removal as an integral unit in the treatment process is practiced at only 67 plants. These plants serve over 8,000,000 people.

This report, "Statistical Summary of Sewage Works in the United States," is available through the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for 10 cents per copy.

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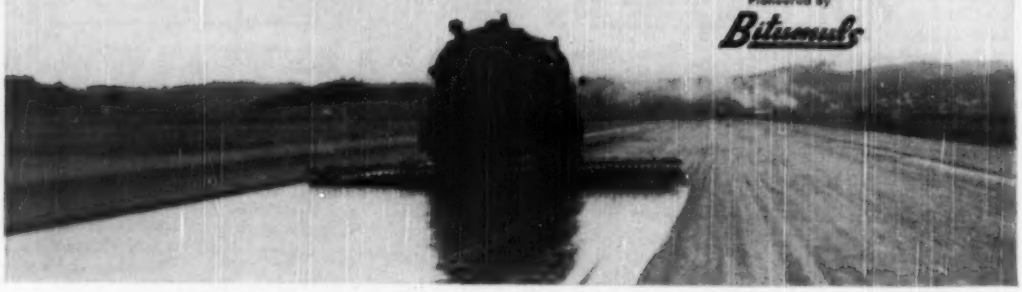


## QUIZ for Paving Engineers

***How do YOU answer these questions?***

1. **Can you hold wet, round gravel or large aggregate with your present binder?**
2. **Does your binder stay on the road, when "shooting" a steep grade or high crown?**
3. **Are your surface treatments rugged, non-skid, and vapor-permeable?**

If your answer to all three questions is "Yes", you must be using *Bitumuls HV*—a "High Viscosity" asphaltic emulsion that is now used by a majority of State Highway engineers, because it really holds the aggregate, large or small, wet or dry.

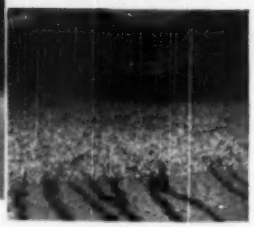
Precise application is easy. No excess binder to cause fatness or slippery pavements—or to act as a vapor barrier retarding drainage by upward evaporation. You get a non-skid, vapor-permeable seal.

***If You have not used "HV", try it on one job—you, too, will adopt it.***

1. Stone Held?

—or Ravels?

2. Binder stays put?



—or Runs Off?

3. Rugged & Non-skid?

—or Fat & Slippery?

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# Buffalo Urban Redevelopment—

## *A Community Challenge*

**Photo, left, shows area in Buffalo in about 1900; at right is the same general area in 1950. The slum section will be cleared this summer for a public housing project, and may be a study area for solving relocation problems.**

By SEYMOUR STILLMAN
*Director of Planning*
*Municipal Housing Authority*
*Buffalo, N. Y.*

BUFFALO'S urban redevelopment program is "rolling," a result of total community cooperation towards a common goal.

A Republican mayor and a Democratic council acted unanimously and promptly—two virtues seemingly lacking in many municipal issues—in designating the Municipal Housing Authority as redevelopment agency. That was eight months ago, only days after passage of the Housing Act of 1949. The same sort of vigorous support from the legislative and executive branches has been evidenced since that initial step.

Already general policies have been formulated, necessary supporting studies assembled, and community action taken. A report, outlining progress and philosophy, has been submitted to the City Council—and received very well, both by the Council and the press.

The report, called "Orientation," covers the three essential principles adopted by M. H. A.: (1) Slum clearance is not a one-agency job; (2) it is not a "five-years-and-then-it's-over" project, and (3) it is not an isolated process of rebuilding.

### Community Cooperation Proves Valuable

The aid and advice of all groups and interested parties have been enlisted. At a recent conference on redevelopment, all participants from civic agencies agreed fully on the principle of "togetherness," of collectively discussing and solving problems. All relevant departments and associations must act as reservoirs of data and special counsel. Already this approach has proven beneficial. The Council of Social Agencies carried on an extremely valuable study on relief; the Planning Commission put the steam on for an integration of its master-plan studies; and activity by the Building and Health Departments culminated rapidly in progressive housing and health-code changes. Conversely, a modern zoning ordinance, a Planning Commission baby, is being pushed by M.H.A. as worthy and necessary. Since the planning body does not intend to make an analysis of the urban economy, M.H.A. is undertaking this basic study so essential to comprehensive plans.

The thinking and planning are geared for a broad 20-year redevelopment program. Whether legislation continues or not, a long-range plan is a more realistic approach. Short-term schemes fit more closely and there is always the planner's optimism that the public and officials will continue a good program once begun and proven effective.

Strong attempts are being made to tie projects into building plans of other agencies, particularly the waterfront plans of the Planning Commission, the State Public Works expressways and high-level bridge, and public housing. Recently, a Neighborhood House group proposed to construct a new recreation building. It wishes to build now, on a possible slum-clearance site, but we were able to convince the group to wait so that its plans could be correlated with redevelopment. Two church groups are in somewhat similar positions.

Perhaps the most illuminating development to date has been our approach to relocation of displaced families. The Housing Act of 1949 requires that "there be a feasible method" for relocation from the project area. Those eligible can be provided for in public housing—but what about the ineligibles? No directives from the Housing and Home Finance Agency have indicated whether funds can be employed for socio-psychological studies of slum residents. Yet, the uprooting of families may present problems of great proportions, perhaps great enough to block any smooth program. (With slight stretch of Title IV, couldn't an inclusive federal program embrace such needed social research?)

### Approach to Relocation Problem

Realizing the possibilities of problems and obstacles, and the necessity for concern, M.H.A. has had frequent conferences with members of the Psychology and Sociology Departments of the University of Buffalo. The questions we have been probing generally are: (1) What are the looming dangers, injustices, impact, and psychological problems involved in displacing thousands of different types of families and individuals? (2) How can we measure and anticipate these problems, to adopt positive principles and guides, and thereby prevent possible tensions and

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Mono-Cast Pipe serves equally well beneath crowded city streets or in cross country installations. View at right shows a 36-inch Mono-Cast bell and spigot water line serving Oklahoma City, Oklahoma.

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trictions in the community as well as, on the positive side, carry out relocation with most favorable results for the families?

Although sociometric techniques are not new or strange, aspects connected with relocation may very well be different. Actually, there are not, to our knowledge, such relocation analyses.

Whether funds and qualified personnel will be available for such surveys cannot be answered now. There has been agreement on the usefulness and importance of various kinds of studies —sample interviews, by blocks, by individuals; follow-up surveys of families relocated, etc. Not nearly as elaborate, but favorable financially, is a possible pilot study of a 10-acre slum area to be demolished for public housing. In capsule form, we face similar problems of relocation. Family incomes range from $300 to $9,000, and the ethnic structure appears representative of prospective clearance areas.

Buffalo views the Housing Act of 1949 as a community challenge. The city looks forward to at least two results after the job has been accomplished:

Local citizens will point to redeveloped areas and say, "This is city building. This is city living. Why did we wait so long!"

Federal officials will point to redeveloped areas and insist, "This is no longer an experiment. We must continue the program until the urban slum is but an historical fact."

# Incineration Performance Analyzed

## Public Works group at spring meeting discusses salvage, pit-and-bucket operation, floor dumping

FOUR aspects of incineration were discussed at the spring meeting of the American Public Works Association New York–New Jersey Metropolitan Chapter, held in Princeton recently. The phases were: salvage work; pit storage in the small plant; floor charging; and the round vs. the rectangular incinerator furnace. The panel was directed by I. Russell Riker, Borough Engineer of Princeton, N. J.

Salvage work was analyzed by Robert Woodcock, Superintendent of Refuse Disposal, Rockville Centre, N. Y. Mr. Woodcock stated that since 1925 the Sanitation Department has encouraged salvage work, and since 1935 it has conducted salvage work with village forces. Prior to the war, revenue from this source amounted to $2,000 to $3,000 per year.

### Made Plant Self-Supporting

During the war years, prices for salvable material soared so high that Superintendent Woodcock could even find a steady market for broken glass. From 1942 to 1950, the Department has realized $17,700 per year. In the peak year income from this, along with income earned for burning refuse from other villages, was great enough so that earnings exceeded operating costs by $4,000. This meant that the Department was able to burn the village refuse for nothing and turn in a surplus to the General Fund. Last year, earnings from salvable material amounted to $13,212.

Most of the salvaged material, Mr. Woodcock stated, was paper, corrugated board, and rags. However, he also reclaimed roofing scrap, burlap, old rugs, carpets, mixed metals, broken glass, grease, old storage batteries, barrels, crates, and baskets. He even was able to salvage and sell window-shade rollers, umbrellas, old hats, and shoes. These latter items, incidentally, are shipped in quantity to the South and Central American markets.

Mr. Woodcock stated that he is completing a new dump pit and conveyor belt from the pit to the incinerator that will make it easier to pick salvable material.

### Pit-and-Bucket Fits Irregular Refuse Load

Pit storage at the incinerator was analyzed by Walter Bates, Town Engineer, Darien, Conn. This town has a population of about 12,000. Its incinerator has two 30-ton single-cell Pittsburgh-Des Moines burning units. The plant is designed so that its capacity can be doubled without difficulty. The plant has a refuse-receiving pit and a monorail system carrying a bucket that transfers the refuse from the pit to the furnaces. Furnace residue is transferred by a hydraulic jetting device to an ash hopper; the same bucket then picks up the residue and places it in trucks for final disposal. The pit and bucket combination, Mr. Bates pointed out, makes it possible to reduce the size of the building by eliminating the third basement floor, where the residue is customarily dumped directly into the trucks.

The use of the storage pit, Mr. Bates said, makes it possible for this incinerator to receive refuse on an irregular rate conveniently. On some days the refuse received at the plant will be as much as 25 tons, while at other times it might be as little as 8 or 10 tons. The crane and bucket are operated by push-button control from the charging floor.

Floor-dump operation was presented by August Stolz, Commissioner of Public Works, Mount Vernon, N. Y. The new Mount Vernon incinerator has a rated 24-hour capacity of 600 tons (see pages 136-137 in THE AMERICAN CITY for May 1950). Commissioner Stolz estimated that to add a storage pit to his incinerator would have increased the building costs by $50,000, and would have increased operating costs also, since at least two skilled crane operators would have been required. The refuse received in the plant varies between 125 and 155 tons; therefore, with the furnace capacity available, he can receive it in the furnaces directly from the truck. He expressed his opinion as preferring to dispose of the refuse directly without further handling. The Mount Vernon incinerator consists of four Nichols 150-ton Mono-hearth burning units. With the new furnace, the Commissioner stated, he has been able to reduce his working crew from 45 men to 13.

A discussion of the round type of incinerator compared with the rectangular was presented by Mr. J. Christianson, Incinerator Superintendent of Irvington, N. J. Mr. Christianson expressed the opinion that the problem was not so much one of design as it was care of operation. He stated that the complex character of the refuse made it mandatory that the operators be constantly alert. He showed the group unexploded bullets of substantial calibers, evidently war souvenirs, that his men had taken from the refuse. He told of similar shells that had dropped into the furnaces and exploded, causing a fair amount of damage. He mentioned that floor sweepings and buffings from a shoe-repair shop were particularly flammable and often flashed back out of the furnace charging door.

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Dear Jane,
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Dad says it's all because of the Bowser Water Filtration System. He's a chemical engineer (as if you didn't know) and really knows his stuff.
You may find it hard to believe, but he says all the water in the pool is completely filtered every six hours. When you come for your visit we'll swim every day! I can promise you'll be spoiled for swimming in any pool that doesn't have a "Bowser."
I can hardly wait to see you!
Write soon. Love Mary
P.S. Why don't you have your dad suggest Bowser filters for your City pool? He'll be doing the swimmers a big favor!

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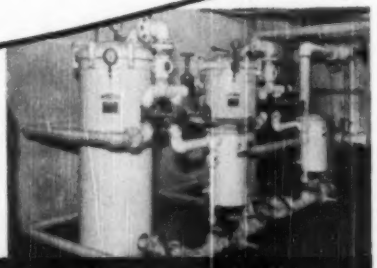

**Typical Bowser system serving a 176,000 gallon pool.**

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## *Annapolis Multiplies Its Square Mile by Six*

AN important annexation proposal expanding the city's area from less than one square mile to about six miles, and adding a population of about 10,000 to an existing 15,000 population-base, was approved by the voters of Annapolis, Md., on May 23 by a vote of 1,056 in favor to 943 against.

Last year the 300-year-old city, bounded on three sides by water and on the fourth by the U. S. Naval Academy, was empowered by the Maryland General Assembly to invite its outside suburbs to consider annexation. Population had overflowed from the city's existing four wards, containing numerous state and historic buildings, into large surrounding unincorporated areas.

Mayor Roscoe C. Rowe promptly appointed an Annexation Commission to make a report and set up plans for the May special elections. The Commission, after careful investigation, did a painstaking study of every phase both for and against annexation, which other small or medium-size cities contemplating boundary extension would do well to review. It suggested ways for coordinating patchwork conditions which had been accumulated for years under four taxing bodies: the city, the county, the Metropolitan Sanitary Commission, and the County Sanitary Commission. The City Council, after receiving this clarifying report, adopted enabling ordinances for creating four new wards, the step which has now been approved by the voters.

Steps will be immediately taken to improve police, fire, and ambulance service in the suburban area. As the city has a modern water department capable of supplying a population over 50,000, water extension into a new area for health and fire protection will be forthcoming soon. The new city area will also receive an extension of a sewer system by the Metropolitan Sanitary Commission, a long-delayed necessity for which the suburban residents have been taxed for several years without benefiting from sewer service.

NORMAN DE WIND

See "Annexation Problems and Progress," page 100.

## *More Cities Adopt Retirement Systems*

RETIREMENT systems are in effect for municipal employees in 998 U. S. cities, according to the International City Managers' Association.

Information reported to the 1950 Municipal Year Book shows nearly 94% of the cities with a population over 10,000 have either a local or a state retirement plan covering some or all of their non-school employees. Only 71 cities reported having no retirement plan of any kind.

In 686 of the cities surveyed, all non-school employees are covered by a retirement system. In 188 other cities retirement plans are in effect for policemen and firemen, but do not extend to other municipal employees, while 114 cities reported retirement systems for either police or firemen, but not for other groups. Retirement plans for groups of other employees were reported by 10 cities.

State-administered retirement systems for non-school municipal employees are now in effect in 30 states. Three others have plans covering fire employees only, and one has a state system covering police employees only. A new state plan adopted in Georgia last year covers only welfare and public-health employees of cities and counties.

A total of 446 of the 998 cities with retirement plans for their employees participate in state systems. In three states that have state-administered plans—Florida, Nevada, and Pennsylvania—no cities were participating in the retirement systems at the end of 1949. Ten other states reported that no cities over 10,000 joined with the state-administered plan last year.

## *Regional Seminars On Community Organization*

"COMMUNITY organization" is the theme of the three regional seminars on social affairs which will be sponsored by the Section of Housing and City Planning of the Pan American Union, during 1950 and 1951, in three different sections of Latin America. The specific subjects to be discussed are: cooperatives, housing and city planning, social work, and workers education.

The First Regional Seminar, to be held in Quito, Ecuador, early in June, includes the following countries: Bolivia, Colombia, Ecuador, Panama, Peru, and Venezuela.

## *Scranton Attracts Small Industries*

THE STORY of a "worked-out" anthracite mining community—Scranton, Pa.—being transformed into a highly diversified industrial center was told in New York on May 9 by Roy Stauffer, of the New Industries Committee of the Scranton Chamber of Commerce. The occasion was the annual conference of the Association of State Planning and Development Agencies held at the Hotel New Yorker.

Mr. Stauffer said that since 1945 a total of 18 small one-story steel and concrete factories for use of new industries have been built through sale of debenture bonds to the public in the Scranton area. The bonds, bearing 4% interest, furnished half the capital needed. The balance was obtained through local banks. The 18 plants have been rented by manufacturers for about 40 cents per square foot per year, which is about 10% per year of the cost of the buildings. Mr. Stauffer told the conference that the Scranton Plan is being extended to include a five-year factory building program costing $10,000,000 financed after the original plan.

"We plan to build factories from 40,000 to 100,000 feet or larger," he said, "and have them ready so that when a manufacturer decides to locate in the Scranton area, we can say, 'Here's the building—you may move in tomorrow,' just as construction people today are doing with new homes."

Incidentally, Scranton shares with Pittsburgh the advantage of state legislation under which industrial and other buildings are taxed for municipal purposes at only half the rate that applies to land values.

## *Who Pays for Street and Utility Installations in New Residential Areas?*

**Cities Replying**

| | Population 500,000 and over | | Population 100,000-500,000 | | Population 50,000-100,000 | | All Groups | | Total Replying 98* |
|---|---|---|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | Yes | No | Yes | No | |
| Does city have subdivision regulations? | 9 | 1 | 35 | 5 | 40 | 4 | 84 | 10 | 94 |
| Do they cover area beyond city limits? | 2 | 9 | 20 | 18 | 18 | 28 | 40 | 55 | 95 |
| Does developer pay for improvements? | All | Part | None | All | Part | None | All | Part | None | All | Part | None | |
| Street grading | 8 | 1 | 2 | 35 | 2 | 3 | 40 | – | 5 | 83 | 3 | 9 | 95 |
| Street paving | 7 | 3 | 1 | 32 | 4 | 4 | 32 | 5 | 8 | 71 | 12 | 13 | 96 |
| Curb & Gutter | 9 | 2 | – | 33 | 2 | 3 | 33 | 3 | 6 | 75 | 7 | 11 | 93 |
| Sidewalks | 9 | 1 | 1 | 35 | 1 | 1 | 33 | 2 | 9 | 77 | 4 | 11 | 92 |
| Water Mains | 3 | 4 | 3 | 18 | 6 | 10 | 17 | 6 | 20 | 38 | 16 | 33 | 87 |
| Sanitary sewer | 8 | 3 | – | 31 | 5 | 3 | 32 | 4 | 9 | 71 | 12 | 12 | 95 |
| Storm sewer | 6 | 1 | 4 | 26 | 4 | 7 | 26 | 4 | 13 | 58 | 9 | 24 | 91 |
| Is the developer reimbursed for cost of one or more of items above? | Yes | | No | Yes | | No | Yes | | No | Yes | | No | |
| | 4 | | 7 | 8 | | 27 | 8 | | 35 | 20 | | 69 | 89 |
| Does developer pay all or part of cost of streets or utilities larger than required for his development alone? | All | Part | None | All | Part | None | All | Part | None | All | Part | None | |
| | 2 | 5 | 6 | 11 | 11 | 13 | 13 | 7 | 17 | 26 | 23 | 41 | 90 |

* Not all cities answered every question.

**A detailed report of replies received to this question from 98 cities in 34 states and the District of Columbia is contained in *Technical Bulletin No. 13*, published by the Urban Land Institute, from which the above table is reproduced. The returns indicate that the majority of cities now require the developer to bear the total expense of street and utility installations with the exception of water mains and storm sewers. The Bulletin may be obtained from the Institute, 1737 K St., NW., Washington 6, D. C., at $2.00 per copy.**

## WHEN THE GOING GETS ROUGH

The "Husky" has the rugged strength to stand up under snow, sleet, storms and sun; and deliver accurate, dependable, day in and day out performance. With its easy automatic operation, it brings trouble free parking control, high returns in revenue and public approval. And its price is low, *very low*. Be sure to write for full information.

THE *Husky*

**AUTOMATIC PARKING METER**

Companion Meter to the famous KARPARK "SUPERIOR"

THE KARPARK CORPORATION • CINCINNATI 6, OHIO

THE HUSKY IS MANUFACTURED BY THE HERSCHEDE HALL CLOCK COMPANY

# THE METER THAT HAS EVERYTHING

**ACCURACY:** Precise timing gives the parker what he pays for; builds confidence.

**EASY AUTOMATIC OPERATION:** All that's needed is the insertion of a coin—as simple as pushing a button.

**EASY MAINTENANCE:** Ruggedness and tamper proof features make repairs a rarity. Separate openings for collection and servicing.

**DEPENDABILITY:** Sturdiness in every part assures steady operation in all kinds of weather.

**EASY ENFORCEMENT:** Clear, simple instructions, high visibility of signals make it easy on officers.

**STEADY INCOME:** Constant operation and easy use maintain steady flow of revenue for the city.

WRITE FOR COMPLETE DATA
Responsible Distributors are invited to ask for full particulars.

KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK COMPANY

KARPARK *Automatics*

KARPARK CORPORATION CINCINNATI 6 OHIO

# Recent City Manager Appointments

**The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City***

**Donald H. Blatt**
**Calais, Maine**

**Robert McCord**
**Norton, Va.**

**Ray W. Wilson**
**Phoenix, Ariz.**

**O. E. Stolen**
**Ishpeming, Mich.**

**Robert C. Storey**
**Mount, Minn.**

**Dale Dahlgren**
**Lindsay, Okla.**

**S. G. Backman**
**Shelbyville, Tenn.**

**R. H. VanDeusen**
**Clarinda, Iowa**

**C. A. Taylor**
**Lamesa, Texas**

**H. K. Hunter**
**Sunnyvale, Calif.**

O. B. AGNER has replaced CHARLES C. BROWN as manager of Dover, Del.

J. MAYNARD AUSTIN, former acting manager, has accepted the appointment at Houlton, Maine.

R. E. BAUMBERGER, manager of Boulder, Colo., since 1948, has been appointed at Superior, Wis.

JOHN B. BIBBER has replaced BENEDICT A. KELLEY at Islesboro, Maine.

BYRON E. COMPTON, consulting engineer, is the new manager of Gainesville, Texas.

R. L. DAVIS, former city clerk, has replaced J. O. HALL at Muskogee, Okla.

B. LEROY GILBERT, assistant manager, has accepted the appointment as manager of Kalamazoo, Mich.

MERLE F. GOFF has replaced EARL A. WHITE at Boothbay Harbor, Maine. Formerly he was Bangor's purchasing agent.

GEORGE HAMMAR, street and water superintendent, has been named acting manager of Stambaugh, Mich.

ALFRED S. HARDING is the new manager of Bridgton, Maine. He has replaced CONRAD L. DRAPEAU.

PAUL HERMANN, manager of Bethel, Vt., is the new manager of Bennington, Vt.

SAMUEL B. HOOD has accepted the position as manager of Santa Rosa, Calif.

JOHN E. HUNTZINGER, formerly an accountant with GMC, has been made manager of Sylvan Lake, Mich.

RALPH IRVING has accepted the post of first manager of Waldoboro, Maine.

ROBERT E. LAYTON, former manager of Randolph, Vt., has replaced Acting Manager JEANNETTE S. WHITTIER at Danvers, Mass.

L. M. MCCONNELL, manager of Ketchikan, Alaska, since 1948, has become the first manager of Warren, Pa.

GILBERT E. MICHAUD is the new manager of Eagle Lake, Maine.

THOMAS H. RILE has accepted the appointment at New Holland, Pa.

FRANK E. RILEY has been appointed manager of Monroe, Maine.

CHARLES A. ROSS has accepted the appointment as manager of Blaine, Maine. He replaces BENJAMIN A. BUBAR.

C. W. SHELLEY, formerly of Inglewood, Calif., has replaced Acting Manager GEORGE O. TREEM at Las Vegas, Nevada.

H. B. SMITH is the new manager of Excelsior Springs, Mo.

EARL P. WAGNER, former administrative assistant at Golden, Colo., is the new manager of Wayzata, Minn.

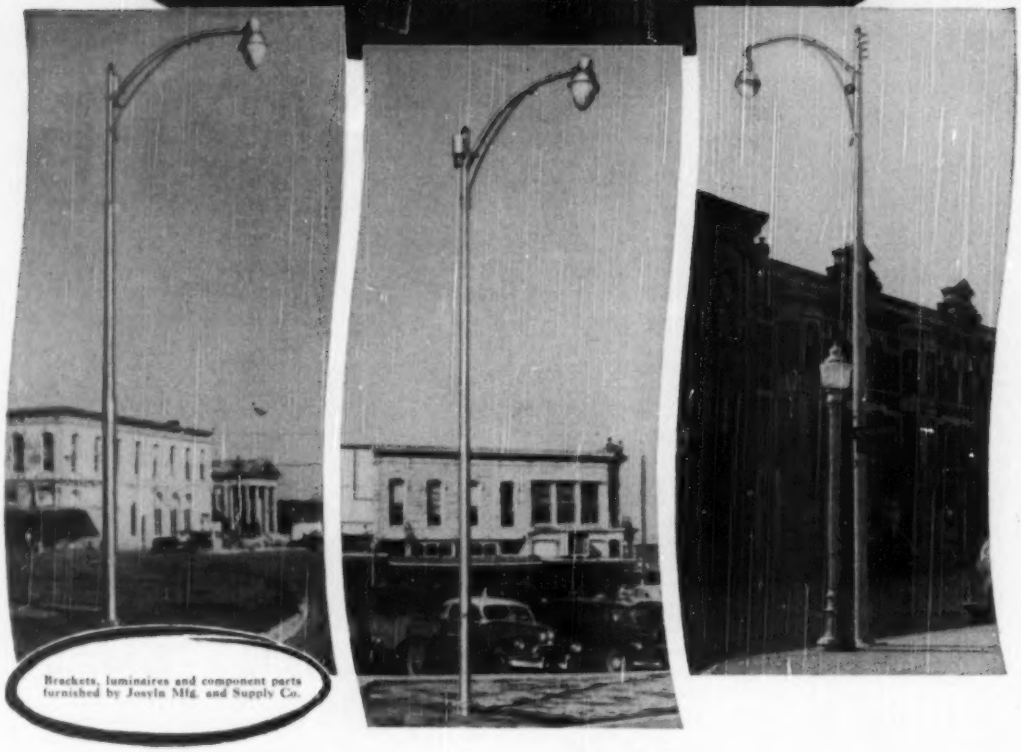
CLARENCE E. RIDLEY, *Director*
*International City Managers' Association*

## *Strategic Dispersion Urged by President*

*FROM President Truman's message to the United States Conference of Mayors, in session in New York, May* 11, 1950:

"May I suggest that, in your city planning and building activities, you pay particular attention to the municipal problems of strategic dispersion. Unless absolutely necessary, it is unwise to continue the building of vital municipal facilities in the center of cities already congested. The present trend toward municipal dispersion should be continued for civil defense reasons."

# *Spruce Up* your streets with these smooth steel poles



Brackets, luminaires and component parts furnished by Josyln Mfg. and Supply Co.

ALL over the nation, cities are launching civic redevelopment projects. It's a good idea, for in the battle to attract new businesses (and hold old ones) tidy appearance can be an important feature.

You've taken a major step toward beautifying your community when you replace obsolete, irregular poles with modern, good-looking tubular steel standards. They're slim, because steel is stronger. You can have greater height with smaller pole diameter. And that's a big safety feature because there is less visual obstruction. Less safety hazard.

Their economy is important, too. Steel poles can be spaced at wider intervals. Fewer poles are required. Tubular steel poles are easy to rig. They rarely have to be replaced. And, except for an occasional paint job, require no maintenance.

Superior construction methods account for the popularity of NATIONAL Seamless Tubular Steel Poles. A billet of finest quality steel is pierced to form the basic tube. You get uniform wall thickness all the way through—without welds or seams to weaken the tube.

For detailed information about these high quality poles, write to National Tube Company, Frick Building, Pittsburgh 19, Pa. and for Bulletin No. 14.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.

COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

**NATIONAL *Tubular* STEEL POLES**

**UNITED STATES STEEL**

# School Bond Issues Improve—
# Low Interest Rates Are Common

By CATHERINE CLARK
*Municipal Service Department*
*Dun and Bradstreet, Inc.*

A FIVE-FOOT shelf of books on the theory of debt management and interest rates makes a handy reference library, but a look at some of the new bond issues sold recently is almost as informative—and perhaps more interesting. Since a large part of municipal borrowing now is for school purposes, the sample chosen consists of 22 school bond issues sold between April 10 and May 10.

Let it be said immediately that this was not a "scientific" sampling, the chief criterion in selection being the availability of information. Nevertheless, these 22 issues, from 14 different states and including school districts ranging from 3,000 to 435,000 in population, are fairly representative. What do these issues show about present debt practices and municipal bond prices?

In the first place, all 22 issues were for improvement purposes—to build new schools or additions, to acquire sites. This is not to say that school districts or cities no longer fund deficits or refund maturing bonds; but the number of non-capital issues is very small compared with even ten years ago.

It is interesting, too, that all 22 issues were serial bonds; and on this point, these issues are certainly representative. Term bonds, with the exception of some term issues which are callable in serial installments, are almost a thing of the past.

Furthermore, half of the 22 issues matured within 20 years or less, and all of them within 30 years; the weighted-average maturity of the whole group was less than 12 years. Since more than a third of the issues (eight out of 22) had optional features which permit accelerated bond retirement, even this short average maturity is likely to be reduced. The increasing use of optional features is gradually bringing about a greater and wholly desirable flexibility in debt retirement schedules. This flexibility allows the level of annual debt service to be adjusted somewhat to economic conditions; at the same time the municipality retains the privilege of rapid debt retirement.

### Improvements Noted

All this adds up to a considerable improvement in debt administration over even twenty years ago. The fact that school districts are scheduling their debts for retirement over a relatively short term of years means not only a substantial saving in interest charges but also fewer problems in financing future school buildings. A rising curve of annual debt service charges over 20 or even 30 years used to be not at all uncommon; and if, as often happened, another new school was required within the period, the curve became even steeper or maturities even further deferred. Now, more and more school districts are scheduling their bonds so that annual debt service charges either follow a declining trend or remain at a fairly even level over a 10 to 20 year period. If a new school building is required, it can be financed without an unduly sharp rise in debt service.

This comparison of past and present practices is strikingly illustrated in the case of Grosse Pointe, Mich., School District, one of the issues in our sample. The district's new issue matures within 17 years, and optional features permit the retirement of the entire issue within six years. By contrast, the bonds outstanding before the new issue, all of which were issued prior to 1930, do not mature finally until 1960. In other words, the new bonds, issued in 1950, can be retired by the end of 1956, while the old bonds, all issued at least 20 years earlier, may not be finally retired until four years later.

Our sample shows the improvement in municipal debt administration; what does it show about the prices at which school districts are selling their bonds? The period chosen is a particularly good one, because it was one of comparative stability in the municipal bond market. The *Bond Buyer's* index of the yield on 20 municipal bonds was 2.02% on April 6, and 2.02% again on May 4. With the influence of general market conditions thus "controlled," the price distinctions which bidders make between individual issues can be more easily assessed.

### "Dogs" Become "Ladies"

It sometimes seems as if such distinctions are no longer made. In bond men's slang, many a "dog" has become a "lady" in the last few years. The indexes of bond yields give partial support to this view. The *Bond Buyer*, for instance, computes two indexes, one based on 11 bonds and one on 20, the average investment quality of the 11 bonds, at least according to the classification of recognized rating agencies, being somewhat higher than that of the 20 bonds. In May, 1933, when both indexes showed their highest yield, the spread between the two was 0.79%. By February 1946, when both indexes showed their lowest yield (1.04% for 11 bonds, 1.29% for 20 bonds), the spread had dropped to 0.25%. On May 4, 1950, though yields had risen for both groups of *bonds*, the spread was only 0.18%.

However, though the spread is less, it is still there. Our 22 issues were sold at net interest costs ranging from 1.46% to 2.62%—and the latter issue had the shorter average maturity. For the most part, these differences in price were due to generally recognized credit factors—extent and stability of basic economic resources, debt load, debt record, provisions for payment (limited or unlimited taxes) of the bonds. The most favorable net interest cost was received by Indianapolis School City, which has a very low overall debt load (the ratio of overall debt to the estimated full value of taxable property is approximately 3%), a no-default record, diversified and fairly stable economic resources, and no limitation on debt service taxes. The least favorable net interest cost was received by Lincoln Park, Mich., School District, which has a moderately heavy debt load, a record of prolonged default during the 1930's, and a limitation on taxes for debt service.

Because of differences in the average maturity of these issues, the prices at which bonds of designated maturities were offered for sale by the successful bidder is a better comparison than the net interest cost at which the bonds were sold. Leaving out of consideration Lincoln Park School District, where the offering prices were affected by rather complicated provisions for calling bonds, bonds of 10-years maturity were offered to yield between 1.25% and 1.90%, a spread of 0.65%. For bonds of longer maturity, 15 years and 20 years, the spread was 0.75%. In each case, the yield for Indianapolis school bonds was the least, while bonds of Texas, Illinois and Ohio school districts shared honors for the highest yield.

In some cases, it is easy to see why certain bonds offer a higher yield than others. The Texas school district mentioned above has a moderately heavy debt load and its bonds are payable from limited taxes; the Illinois school district is in Cook County, which has a reputation for poor tax collections; and so on. But in other instances, the differences are hard to understand. For example, why should a 20-year bond of a New York school district yield 2.00% and of an Ohio district 2.30%, when both are payable from unlimited taxes, and the overall debt of the New York district amounts to 22% of estimated full taxable valuation, compared with less than 4% for the Ohio district? The answer to such cases is probably found in certain state tax features which create a special demand.

Despite these variations in price, the fact remains that all of the 22 issues were sold at relatively low net interest costs. The highest was only 2.62%, while 19 of the 22 were under 2.25% and 13 under 2%. Compared with former years, this is cheap money. In these low interest rates school districts, and cities, can find partial compensation for present high construction costs.

## *Denver Curbs Skywriters*

AN ORDINANCE recently passed in Denver puts a legal hex on several forms of advertising which involve use of aircraft, according to the American Municipal Association.

The new law specifies that "no person shall tow any object with any aircraft or perform any skywriting over the city and county without prior inspection and written permission from the Director of Aviation." Further, "no person shall make any unusual, unnecessary, or disturbing noises with any aircraft," and "no person shall drop, distribute, or throw from any aircraft any handbill, circular or other printed literature or any object or substance whatsoever." The ordinance also prohibits all aircraft but helicopters from flying at an altitude of less than 8,000 feet (3,000 feet over the "Mile High" city), except in landing and taking off.

# Zoning and Planning Notes

Edited by NORMAN WILLIAMS, JR.

## Shopping Districts in Low-Density Areas

CONNECTICUT. *Bartram* v. *Zoning Commission of City of Bridgeport*, 136 Connecticut 89, 68 Atlantic (2d) 308 (Connecticut Supreme Court of Errors, August 23, 1949).

A 1937 AMENDMENT to the Bridgeport zoning ordinance created a business-3 district, in order to encourage decentralization of retail shopping and the development of local shopping centers in the outer areas —thereby providing convenient shopping there, and limiting congestion in the center of the city. The regulations for this district required off-street parking facilities, a 30-foot front yard, and other yards, and placed limitations on the sale of liquor. In the present case the Zoning Commission and the courts approved an application to rezone a small section in an outlying residential area to business-3. In 1936 the zoning along a main street in this area, which was then sparsely settled, was changed from a strip business district to a one-family residence district; and since that time the area had been further developed with small, well-kept-up one-family houses. There were a few small non-conforming stores in the vicinity. One Rome sought to construct a building with five stores—drug, hardware, grocery, bakery and beauty parlor—with parking spaces in both front and rear. Some of the neighboring property owners objected to the development as an invasion of a residential neighborhood, and argued (1) that the proposed rezoning was invalid as spot zoning, (2) that they had bought and developed their homes in reliance on the residential zoning, (3) that any business development permitted in the area would be bound to spread, and (4) that there was no need for additional shopping facilities in the area. The Zoning Commission approved the proposed map change, on the ground that it would be desirable to encourage decentralization of shopping facilities, that the proposed shops would serve a large residential area which was developing near by, and that only one house would be directly affected. The Connecticut Court upheld the change by a vote of three to two, with a split on the question of spot zoning.

The majority opinion defined spot zoning as the granting of a special privilege to one or a few lots in an area, without any basis in a comprehensive plan, and upheld the map change in the present case because it was based on such a plan.

> "To permit business within a small area within a residential zone may fall within the scope of such a plan."

Since the Commission had evidently not selected a series of sites for such future development—and indeed would find it difficult to do so, in the absence of a functional street pattern—the Court apparently felt that a policy of encouraging local shopping development in the outlying areas constituted a sufficient plan. The Court went on to state that, even if local opposition had been unanimous, the Commission was charged with the duty of looking beyond such opposition to the general welfare of the city. The Court also held that the property owners had no vested right in the existing residential zoning, but had purchased with notice of the city's power to change the zoning.

The development of local shopping centers in outlying residential areas is increasingly important. The limitation of local shops to the ground floor, the basic control of such development in medium-density and high-density residential areas, was discussed in this column in March 1949 and February 1950. The Bridgeport business-3 zone is typical of provisions frequently used in the outer areas. Both types of regulations indicate the expanding scope of non-residential zoning.

## Removal of Projecting Signs

ARKANSAS. *Worthen Bank and Trust Company* v. *Arkansas Amusement Company*, U. S. District Court, Eastern District of Arkansas, Western Division.

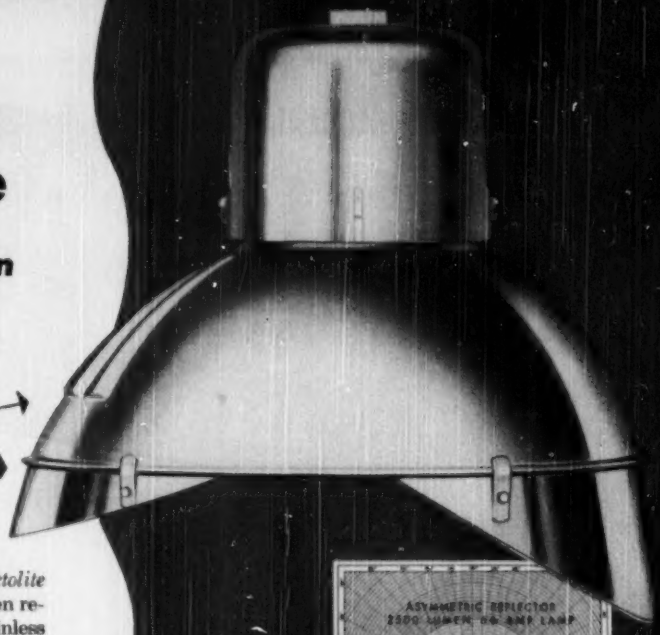
When a theater located in the first block north of the main business corner of Little Rock was enlarged, a large vertical sign (41 feet high and 11 feet wide) was placed above the new theater marquee. The bank located on the next lot to the north complained that the sign destroyed both the symmetry of its building and the view of its building from the main corner, and further that the sign cut off light and air from its building. In addition, the owner of a retail store immediately to the south (which was rented to

(*Continued on page* 167)

**View of the 41-foot-high electric sign of the Center Theater on Main Street in Little Rock, Ark., discussed in the case on this page. The Worthen Bank and Trust Company's building is at the left.**

# *See* L-M's Directolite

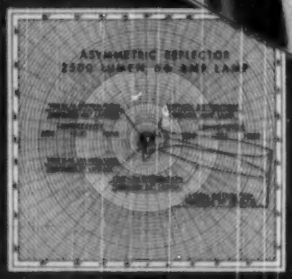
***newly redesigned in stainless steel!***



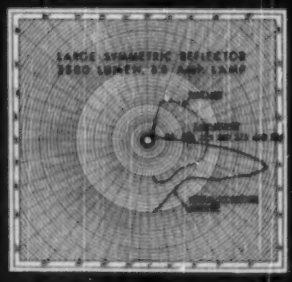
L-M's famous *Directolite* reflector has now been redesigned, in tarnishproof stainless steel, to give even greater overall efficiency for a longer time. *Directolites* are made in the asymmetric design shown above at right, which provides I.E.S. type II light distribution, and in two sizes of the symmetric style for type V pattern, in the lower illustration.

The *Directolite* provides efficient, low cost illumination for smaller communities, residential areas, and outlying sections. It uses 1000 to 2500 lumen series or multiple lamps. It is easily interchangeable with larger luminaires on the same head when population or traffic growth requires it.

Take a look at the new stainless steel *Directolite!* It costs about the same as a radial bowl; but it provides a difference in illumination that citizens can see and appreciate. L-M offers a complete line of street lighting equipment including the new design bracket shown above; and complete street lighting engineering service.




Candlepower distribution curves of the asymmetric type Directolite, which provides lateral control to give I. E. S. type II distribution




Candlepower distribution curve in vertical plane, I. E. S. type V, symmetric type Directolite.

## Get this Bulletin

For more information ask your utility company or the L-M Field Engineer about L-M Directolites and a copy of this bulletin; or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

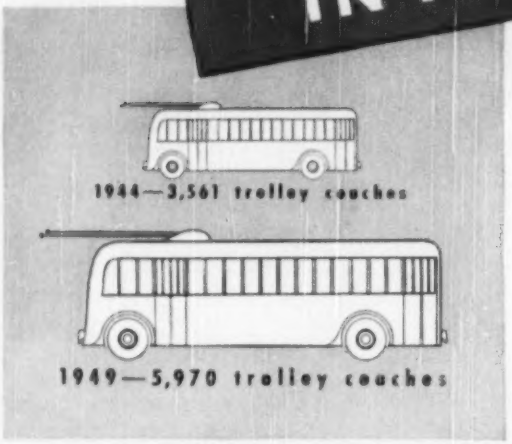
LM-7879

# LINE MATERIAL Street Lighting

**Complete Coordinated Equipment for**

BY POPULAR ACCLAIM:

# 68% MORE TROLLEY COACHES IN FIVE YEARS

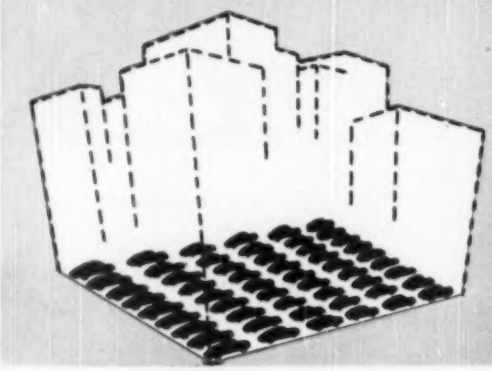



The popularity of trolley coaches is clearly demonstrated by a 68 percent increase since 1944. From a total of 3,561 electric coaches on the city streets at the end of 1944, the number has soared to a total of 5,970 at the end of 1949. Many more are on order.

City officials, transit management and the public agree that these fast, clean and quiet vehicles increase riding and reduce operating costs. *No other transit vehicle can approach this rate of increase!*

## ARE THESE CONDITIONS TRUE IN *Your* CITY?

Does "off-street parking" use valuable commercial property?



Are pedestrians refusing to fight heavy traffic to move from store to store in your downtown area?

If your city—like many of today's cities—is suffering from blight conditions and traffic congestion, effective mass transportation may be the answer. Streets were made to move *people*, not vehicles.

Modern electrics carry more people, attract riders. Write us, and let us help with your planning problems. *Apparatus Department, General Electric Company, Schenectady, New York.*

GENERAL ELECTRIC

# Are Your Streets Overloaded?

## . . . . Use These Charts

AMONG the more important factors that tend to influence a given street's capacity are: (a) width of street and number of lanes, (b) curbside parking, (c) general location, (d) composition of traffic, and (e) turning movements. Street capacities are also affected by the existence of regularly scheduled mass-transit lines. Near side and fare side bus stops and safety zones all have an influence on the carrying ability of a given street.

In urban communities, the intersection plays a very important part in the ability of a street to carry vehicular traffic; in fact, the entire subject of urban street capacities is predicated upon intersection influence. The primary factors evaluating the ability of an intersection to clear traffic are: (a) units of time, (b) units of width, and (c) number of vehicles. Combined, these factors permit the expression of traffic flow in relation to time and surface width.

In order to simplify the analysis of all of these factors for any given street, charts of practical working capacities were developed by the Ohio Highway Study Committee from data taken from the research work of O. K. Norman of the Public Roads Administration and others. The Washington State Design Standards Committee, after a study of the subject, and a check of the accuracy of the results obtainable, adopted the Ohio charts as the most convenient means of tabulating the basic data from which to compute the working capacity of any existing or proposed street.

The charts are arranged in such a manner that the seven principal steps in the computation of working capacity may be followed in an orderly manner.

### Step 1—Location of Street

The circle on the charts is divided into three primary segments; one each for a "downtown" district, an "intermediate" district and, on the chart for two-way street, an "outlying" district.

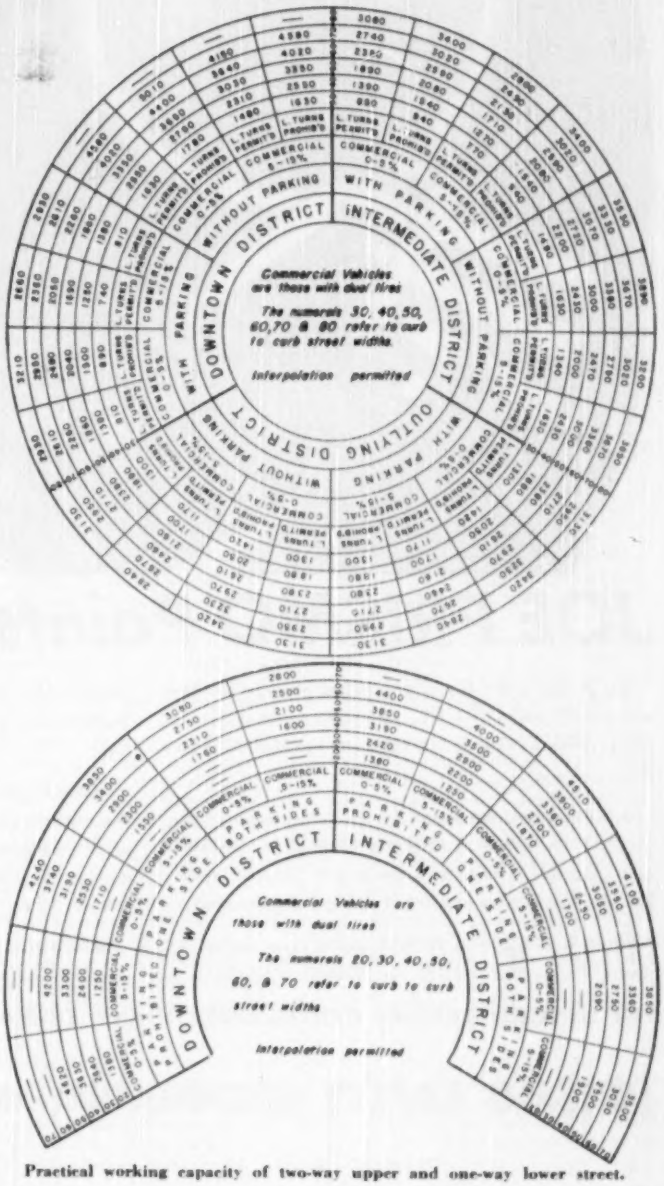
The characteristics of direction of flow for each district are indicated on the chart as follows:

Downtown district—55% major direction—45% minor (opposite direction)

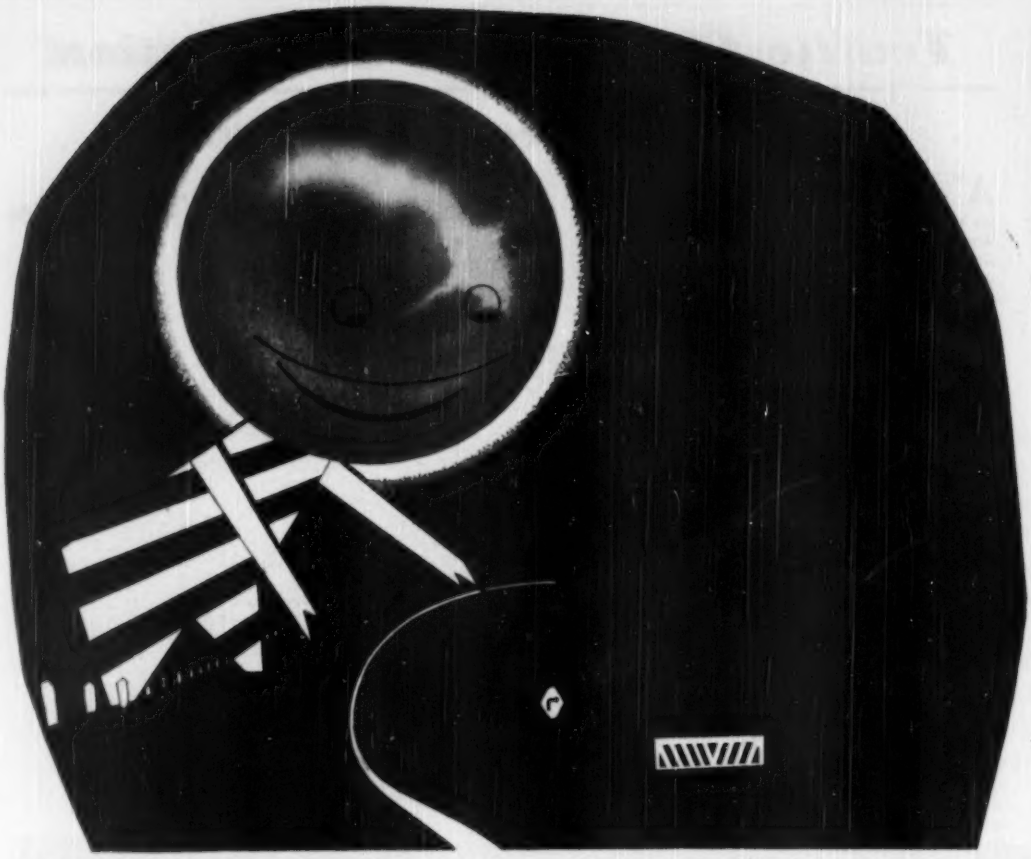
Intermediate district—60% major direction—40% minor (opposite direction)

Outlying district—66⅔% major direction—33⅓% minor (opposite direction)

These percentages apply to the volume of vehicles counted or expected in both directions during the peak one-


DOWNTOWN DISTRICT
WITHOUT PARKING
WITH PARKING
INTERMEDIATE DISTRICT
WITHOUT PARKING
WITH PARKING
OUTLYING DISTRICT
WITHOUT PARKING
WITH PARKING
Commercial Vehicles are those with dual tires
The numerals 30, 40, 50, 60, 70 & 80 refer to curb to curb street widths.
Interpolation permitted
DOWNTOWN DISTRICT
INTERMEDIATE DISTRICT
Commercial Vehicles are those with dual tires
The numerals 20, 30, 40, 50, 60, & 70 refer to curb to curb street widths
Interpolation permitted

Practical working capacity of two-way upper and one-way lower street.



# JOE PRISMO Points the way!

Joe Prismo points the way to better highway markings with the PRISMO LIFE-LINE. Joe Prismo points the way to better reflective coatings for signs with the PRISMO SIGN KIT.

Both processes, developed by the Prismo Laboratories, give you the utmost in reflective coatings at the lowest cost. Through never-ceasing research in the field and in the lab, Prismo gives you longer lasting reflectorization.

Prismo lasts longer on the highways because the special plastic, Prismo Binder holds the PRISMO SPHERES in a vise-like grip. And the Prismo Spheres reflect more light because they're rounder, clearer, more perfect in every way.

Prismo Engineering and pioneer experience with reflective coatings assures you of the newest and finest in dispensing equipment. No matter what your reflectorization problem may be, PRISMO KNOW HOW will help you solve it.

Write today for fully informative bulletins on the many uses of Prismo, the sphere of safety.

***THE LONGEST LASTING CENTER LINE ON ANY HIGHWAY IS THE PRISMO LIFE-LINE***

**PRISMO SAFETY CORPORATION • HUNTINGDON, PA.**

hour period on the street being classified.

Each primary segment is divided into secondary segments as follows:

(a) One-way urban street chart—3 segments
- Parking prohibited
- Parking permitted one side
- Parking permitted both sides

(b) Two-way urban street chart—segments
- Parking prohibited
- Parking permitted

### Step 3—Composition of Traffic

Each secondary segment is further divided into two segments indicating the amount of commercial traffic in the traffic stream. Values have been computed for commercial volumes comprising 0% to 5% and 5% to 15% of the total peak hourly volume. If the volume of commercial vehicles exceeds 15% of the total volume, multiply the volume listed under commercial 0-5% on the chart by the per cent of passenger vehicles in the traffic stream.

### Step 4—Left Turns

Each tertiary segment in the 2-way street chart is further divided into two segments indicating capacities with left turns permitted and with left turns prohibited.

### Step 5—Width of Street

Each left-turn segment of the chart is divided tangentially into six sections which contain values for practical working capacities of urban streets in terms of total vehicles per hour for curb to curb street width of 30 feet, 40 feet, 50 feet, 60 feet, 70 feet, and 80 feet, as indicated radially on the chart.

Capacity values for other street widths may be obtained from the figures listed on the chart by interpolation.

### Step 6—Mass Transit Facilities

If buses stop to load or unload on the street, multiply the value obtained in Step 5 by 0.88.

### Step 7—Fixed Time Signal

If a fixed time signal is used on the street, multiply the value obtained in Steps 5 or 6 by the factor obtained from dividing the number of seconds allotted to green time on the street by the number of seconds in the total signal cycle.

A local engineer desires to determine if "Main Street" between "First Avenue" and "Tenth Avenue" is deficient from the standpoint of existing traffic volume.

This 2-way section of Main Street is located in the central business district, is 56 feet wide, parking is permitted on both sides of the street, and commercial vehicles constitute 20% of the peak-hour volume. Left turns are permitted.

The city transit system operates buses on Main Street with stops at alternate blocks in each direction. Signals are installed at three intersections in this section of Main Street. Signals at two locations allocate 40 seconds of green time to Main Street out of a total cycle of 60 seconds, while one signal allocates 35 seconds of green time to Main Street out of a total cycle of 60 seconds.

A vehicular volume count shows a volume of 1,270 vehicles during the peak hour period. Considerable congestion occurs during the peak traffic flow as evidenced by a back-up of traffic and some vehicles having to wait several signal cycles before proceeding through the signalized intersections.

From the segment of the chart for streets in the downtown district with parking permitted and where commercial traffic forms 0-5% of the peak-hour volume and left turns are permitted, the capacity values are shown to be 1,860 vehicles for a 50-foot street and 2,260 vehicles for a 60-foot street.

Interpolating between these values [(0.6 × 400) + 1,860], a capacity of 240 + 1,860 = 2,100 vehicles per peak hour for a 56-foot street with 0-5% commercial traffic is obtained.

Multiplying the preceding value by 80% results in a capacity value of 0.8 × 2,100 = 1,680 vehicles per peak hour for a 56-foot street *with 20% commercial traffic.*

Applying the factor of 0.88 to the 1,680 vehicles obtained in the preceding calculation yields a capacity value of 1,478 vehicles per peak hour for a 56-foot street with 20% commercial traffic *and buses stopping on the street,*

The traffic signal allows traffic to flow only 35/60 or 58.3% of the time, providing a capacity value of 0.583 × 1,478 or 862 vehicles per peak hour, which is the practical working capacity of "Main Street" between "First Avenue" and "Tenth Avenue."

This section of Main Street is

$$\frac{1270\text{-}862}{862}$$

or 47% overloaded under the present conditions. This verifies the observed conditions of congestion on the street and substantiates the need for corrective measures.

# Mammoth City-Owned Metered Parking Lot

By **JOSEPH H. HUGHES**
*Chief of Police*
*Quincy, Mass.*

MOTORISTS who are consistently thwarted in their efforts to find parking space turn to outlying neighborhood shopping centers. This trend toward decentralization of downtown business areas is giving real concern to merchants, property owners, and municipal officials, all of whom have a huge stake in downtown property.

One of the simplest and most economical methods of helping to relieve downtown congestion is off-street metered parking. The recently completed parking facility in Quincy, Mass., effectively demonstrates what can be done. The photographs on the front cover show this.

Engineered by the Philcot Corporation, a Boston firm of consultants, Quincy has transformed an unsightly central business area into an outstanding parking facility. It is safety-engineered, with one-way weave traffic control, color-texture pavement, traffic channelization, functional lighting by mercury-vapor lamps, and Dual automatic parking meters. Its daily capacity of 5,000 cars per metered period makes it one of the largest municipally owned and operated, fully metered, public parking facilities in the United States. Receipts of the 533 Dual parking meters are collected every two weeks. Collections for the first two-week period averaged $1,200.

Meters are of two types: 1-hour (1 to 5 pennies or 1 nickel), and 2-hour (1 dime or 2 nickels). The daily parking capacity is 5,000 cars per meter period. Up to 1-hour parking is accommodated on the run of the parking area. These meters offer 12 minutes for one cent or one hour for five cents. All the other spaces are equipped with meters allowing one hour for five cents with a two-hour limit. The parking period is from 8 a.m. to 6 p.m. weekdays and until 9 p.m. Fridays when the stores close.

The meters are maintained by the Public Works Department. Police supervise them 24 hours per day.

Advantages of off-street parking are numerous. The motorist parks and locks his own car and pays the parking fee to the meter. He is assured that his car will not be abused by careless attendants. In many cases no attendants at all are necessary, especially if automatic change-making machines are available on the lot. These savings mean that the overhead cost is low; that fees can be set at a minimum, and that the widest possible patronage can be attracted to the lot.

# AGAIN IT'S DUAL AUTOMATICS *for low-cost maintenance!*

**CHECK THIS TYPICAL RECORD IN AN IOWA CITY**

WESTERN UNION

DUAL RECORDS FOR THE CITY OF FORT DODGE, IOWA, SHOW LESS THAN 11 CENTS PER METER PAID FOR MAINTENANCE AND REPAIR PARTS IN 1949.

FORT DODGE HAS 600 DUAL AUTOMATICS TODAY, HAVING INSTALLED 127 IN 1946; ADDED 440 IN 1947; AND PURCHASED 33 MORE IN 1948.

ALL PROSPECTIVE PURCHASERS OF PARKING METERS SHOULD BE INTERESTED IN THESE TRUE FACTS ABOUT A TYPICAL LOW COST DUAL OPERATION.

WITH Duals, low-cost maintenance and trouble-free behavior are well-established habits. First, they are built throughout to the highest standards of quality and precision. Secondly, their advanced design features, developed through years of parking control experience, make full provision for the demands and punishment "dished out" by weather *and* people.

Get *all* the facts on these versatile, long-lived meters. Send for Bulletin DU-504 on Dual *Gearshift* Automatics; Bulletin DU-505 on Duals for *off-street* parking.

**THE DUAL PARKING METER COMPANY**
A subsidiary of The Union Metal Manufacturing Company
Canton 2, Ohio

...YOUR BEST ANSWER TO EVERY PARKING PROBLEM

# Meters Positioned to Prevent Cruising

THE direction in which a parking meter faces may be a small matter to some people, but Middletown, Conn., finds it is good municipal business to give the matter serious thought.

When we ordered the new Hurricane meters from the M. H. Rhodes Company of Hartford, the original intention was to install them on a diagonal or angle basis so they could be seen both from the street and from the sidewalk. The idea to face the meters away from the street came from our Middletown Police Commission Chairman, Irving Segal.

Mr. Segal recommended that the meters be installed face away from the street so that the dial faced the sidewalks and the stores. (Rhodes meters are not transparent. The dial is visible only on one side.) He said our beat policemen on the sidewalk should be able to read these meters at a glance from greater distances.

I've been able to observe at least four advantages to Middletown and to any municipality which installs its meters as we have.

1. It permits the foot patrolman to keep an eye on the meters as he walks his beat.

2. Motorists who go into stores to shop can come to the door or look out of the window of the establishment to see if their parking meters are nearing the "ticket" danger zone. Our Rhodes meters have a very large dial which is of great value to the shopper in this connection.

3. It prevents motorists from driving around and shopping for free time on parking meters. That's been the experience in many other cities and we've had some of it here. But now a motorist drives up to a meter and he has to get out of his car to look at what the face of the meter says. Once he's out of the car he won't get back in just to drive to another meter which may have some free time on it. It prevents congestion from these free-time shoppers among the car drivers. They now see an open place and they drive in, regardless of what the meter says.

4. Because of No. 3, there may be an increase in parking-meter income.

One of Middletown's Hurricanes with back to traffic and dial toward stores.

Middletown's experience with parking meters dates back nearly 10 years. During that period we have tried various kinds of meters, automatic and manual, including the kind that face both the street and the sidewalk. The parking method which I have described here was started more than a year ago, and I have received hardly a complaint. In fact, I'm hearing good things about the system.

JOHN J. POMFRET, *Police Chief*
*Middletown, Conn.*

# No More Courtesy Nickels for Delinquent Parkers

THIS is a little report of the Courtesy Nickel System as it was operated for some months in Hoquiam, Wash. It was predicated on the honor or honesty of the general public. The patrolman in his routine tours of the business district, placed nickels in all meters that were on violation. This gives the violator a "courtesy" hour of parking. He then slipped the envelopes containing our "Courtesy Ticket" under the windshield wiper of the automobile. On finding the car on violation over the second hour, the patrolman issued a regular arrest citation. We set up a sheet listing the license numbers on the duplicate copy of "Courtesy Tickets" issued. The Committee checked these against the tickets returned with money. When they found any regular chiselers who did not pay, their license numbers were turned over to the police, and no more courtesy nickels were issued to these parkers.

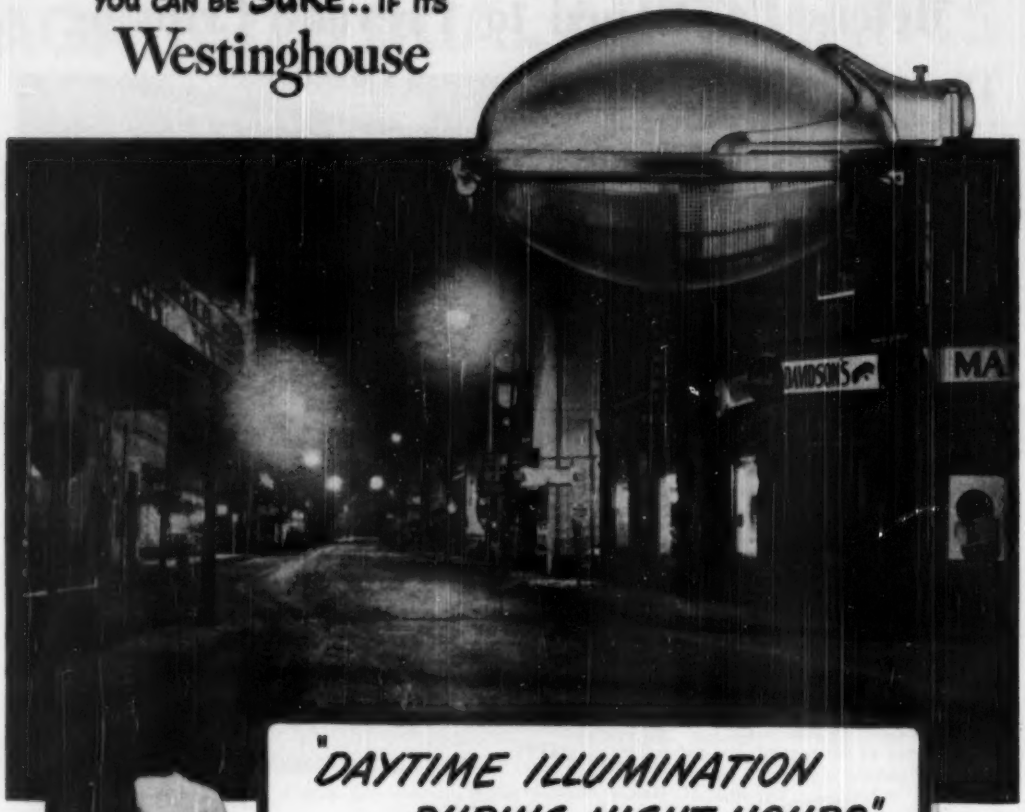
In initiating such a system, a fund is usually set aside according to the size of the city. Hoquiam has a population of about 12,000, and we put the plan in operation with $81.75, of which $56.75 was used for printing 1,000 forms. The Chamber used the balance of $25 of the fund to supply the policemen with nickels for the parking meters. The Courtesy Tickets conformed in size, etc., with regular Police Department citation tickets.

This Courtesy Nickel System was discontinued the first of the year, as the Committee felt it had accomplished its purpose by acquainting the local people with parking meters, which were new in this city.

RUTH E. EMERY
*Assistant Secretary*
*Hoquiam Chamber of Commerce*

YOU CAN BE **SURE**.. IF IT'S

# Westinghouse




## "DAYTIME ILLUMINATION DURING NIGHT HOURS"

*"When the City of Houma considered the illumination of its main thoroughfare, it selected the OV-20 . . . Now that our project is completed, our citizens are proud of the daytime neatness of our Main Street with the 'daytime' illumination during the night hours"*, writes Mayor Leon Gary of Houma, Louisiana.

He points out results by further stating, *"Our merchants are capitalizing on the fine details obtainable in window displays under the Mercury Vapor Lighting system"*.

Not only business results, but added protection, he states, *"Our Police Department is enjoying an easier task from the bright illumination of our high value mercantile area"*.

To sum it all up, *"Frankly, it has been the most popularly accepted of the many projects of our administration"*.

This could be your town. Want proof?

Don't take our word for it. Write Mayor Gary about the new street lighting in his town.

Or better yet, go see the City of Houma. Seeing for yourself is real proof. J-04278-A

**There's Danger in Darkness . . . but Safety in Light**

**Westinghouse**
**PLANNED LIGHTING SYSTEMS**

# Modern Street Lighting Technique And Standardized Equipment

By E. B. KARNS
*Manager, Street Lighting*
*Westinghouse Electric Corporation*
*Cleveland, Ohio*

MODERN street and highway lighting is more than ever before the application of "seeing" to the roadway.

The past 15 or 20 years have witnessed a major change in the technique of street lighting, which has taken out the guesswork. Engineering principles direct more and more of the total output of the luminaire to the area to be lighted. However, in business districts where light on the building fronts and on the sidewalk is desirable, some upward component of light may be permissible.

On residential streets the principal light should be confined to the street surface, with only sufficient "spill light" to illuminate the sidewalk and approaches to each residence.

On traffic streets, where maximum illumination should be maintained, it is desirable to direct even greater percentages of the light to the useful zone.

The prime purpose of street lighting today is to provide visibility for quick, safe movement of both vehicular and pedestrian traffic. The driver must see far enough ahead at all times, under all kinds of weather conditions, to recognize a hazard in time to avoid it. This is often referred to as "visibility distance."

The American Automobile Associations says that 208 feet is required at 30 miles an hour in order to stop a car on dry pavement. This is increased to 445 feet at 50 mph. The American Roadbuilders Association says 1,800 feet of "visibility distance" is required for safe driving on our highways.

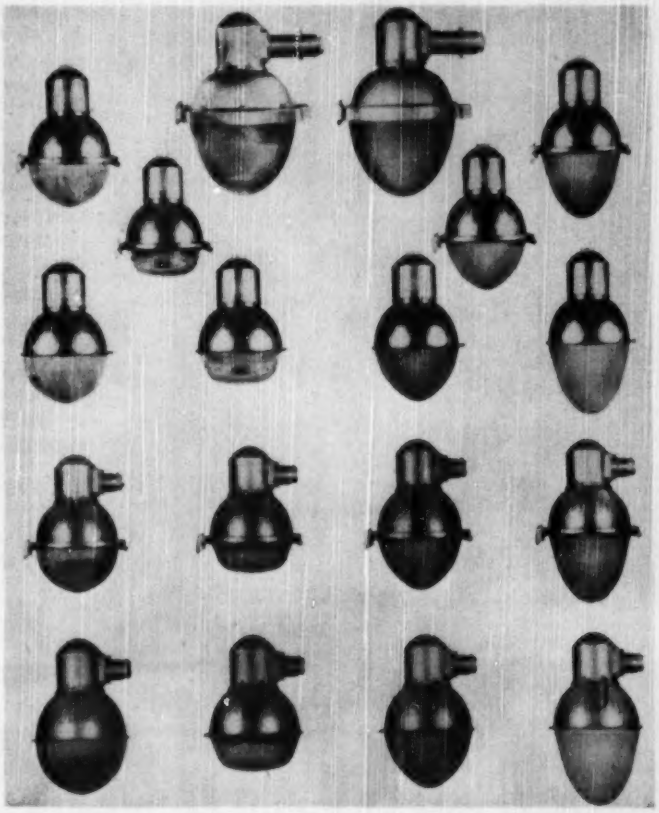
### Methods of Discernment

To produce "visibility distance," we must first understand how we see or discern on the roadway at night. An object is discernible by surface detail when it is seen by virtue of the light or color of itself without regard to surroundings. This type of lighting is employed more or less in a downtown area. An object is discernible by silhouette by brightness of its background. An object is discernible by contrast when it appears to be either lighter or darker than the background. These two methods of discernment, silhouette and contrast, are employed primarily as methods of discernment on residential streets and light traffic thoroughfares.

Since about 90% of our total street mileage would employ methods of discernment by silhouette and contrast, and since pavement brightness is essential for silhouette and contrast seeing, then pavement or road-surface brightness becomes of utmost importance to us.

Dry, diffusing road surfaces reflect their light pretty much in all directions, and it is, therefore, relatively easy to provide bright or light pavements under these conditions.

Uniform surface brightness is more difficult to obtain on a wet surface. In order to produce a bright pavement surface in front of a car on a wet or specular surface, it is necessary that



**The variety of glassware available for providing the distribution patterns set up under the A. S. A. standards, shown on the next page.**

# Streamlined

## UPSWEEP BRACKET FOR STREET LIGHTING

Keyhole Mounting Slot

One Man Installs on Pole

1. **SIMPLE**—Four-foot or six-foot 1¼" pipe clamped with stainless steel bolts to malleable iron pole plate casting.
2. **STRONG**—Strength adequate to support a man—tests on 4-foot bracket showed only ½-inch permanent set under 250-pound vertical load; a 6-foot bracket tested ⅜-inch permanent set with 175-pound vertical load. Tests made at higher loads demonstrate that pole plate develops full strength of pipe.
3. **STREAMLINED**—No bracing required; appearance thereby improved.
4. **STURDY**—Liberally designed hot-dip galvanized pole plate with strong clamp.
5. **SMALL**—Requires less pole space; may be mounted near top of pole or at any desired height.
6. **EASY TO INSTALL**—Keyhole slot in pole plate enables one man to attach bracket assembly to pole.
7. **INTERCHANGEABILITY**—Available for use with slip-fitter-mounted luminaires (as shown, with Joslyn Permalux) or with end fitting for top-mounted luminaires.
8. **PRICED RIGHT TO PROVIDE STRONGEST, SIMPLEST, AND BEST BRACKET AT LOW COST.**

Branch offices in principal cities

THE JOSLYN CO
THE SOUTH EAST JOSLYN CO
SOUTHERN JOSLYN CO
JOSLYN SOUTHWEST CO
JOSLYN PACIFIC CO

# JOSLYN MFG. AND SUPPLY CO.

*Complete Pole Line Equipment*

20 NORTH WACKER DRIVE, CHICAGO 6, ILL.

the lighting units be located over the roadway, directly in front of the car. With correctly applied systems, the surface brightness as seen by the motorist on a wet road at night will be produced by street lamps located near by and as far away as 1,000 feet in front of his car.

### Glare Hinders Vision

Perhaps no single factor in street lighting is so detrimental to vision as glare. This fact must never be overlooked in a well-planned street-lighting system. Glare causes the pupil of the eye to contract, thus reducing the effectiveness of the light throughout the field of vision.

Glare in street and highway lighting is the result of improperly controlled light distribution. Discomfort glare is produced by excessive contrast between the brilliant light source and its background. Blinding glare results from a total amount of light from a light source directed at such an angle that it is directly in the observer's line of vision.

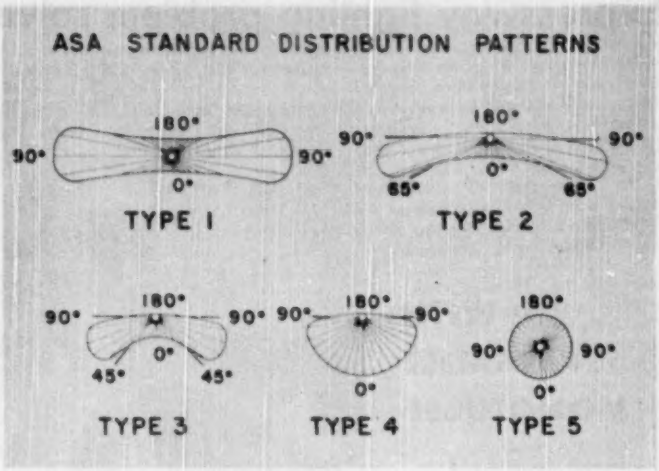
Discomfort glare is controlled in the design of the luminaire. All modern luminaires have the light source well up in the reflector so that a definite cut-off is provided. Also, the reflected light and direct light passing through the enclosing globe are usually diffused by some pattern on the glass itself.

Blinding glare is controlled by the luminaire. It decreases as the angle between the luminaire and the observer's line of vision increases. The higher mounting heights reduce this glare. If the major beam from a luminaire strikes the observer's eye at an angle greater than 20° from his normal line of vision, the glare will not be objectionable.

### Old Luminaires Won't Do

The old-time luminaire distributed most of its light above the horizontal, with only a small amount reaching the roadway. The road surface looked black from the driver's seat. The new luminaires redirect the upward component of light to the pavement at such a low angle that surface reflection is kept within the normal vision of the driver. This makes the pavement bright when viewed from the driver's seat. On a 60-foot street the old luminaire would utilize only 17% of the generated lumens. In the new, controlled type, we utilize approximately 49% of the total lumens. This means, with lamps of the same wattage, the new type of luminaire directs three times the light to the street. It also directs it at such an angle that our pavement brightness is produced.

Therefore, "visibility distance" is the application of the correct lamp size in the correct luminaire, at the correct mounting height and correct spacing.




In 1948 the Street and Highway Lighting Technical Committee of the Illuminating Engineering Society drew up certain recommended practices for illumination values, as well as mounting heights and light-distribution patterns. These recommended practices were adopted by the American Standards Association and have, therefore, become standards for the industry. The A.S.A. Standards books are obtainable from the Illuminating Engineering Society headquarters in New York.

There are five lateral-distribution patterns to be used for various street widths. All of the major manufacturers today provide these five distribution patterns. They enable you to pick a distribution that will give you the best utilization on the street to be lighted. These various distribution patterns are obtained by simply changing auxiliary variation of Type I, which, a two-directional unit, would be four-directional glassware.

Type 1. Narrow Distribution — for mounting over the center of relatively narrow streets, where street width does not exceed 1.6 the mounting height. A variation of Type I, which is a two-directional unit, would be a four-directional for the center of intersecting street mountings.

Type 2. Narrow Asymmetric Distribution—for mounting at or near the curb on relatively narrow street, where the street width does not exceed 1.6 the mounting height.

Type 3. Medium-Wide Asymmetric Distribution—for mounting at or near the curb on relatively wide streets, where the street width does not exceed 2.7 the mounting height.

Type 4. Wide Asymmetric Distribution—for mounting at or near the curb on very wide streets, where the street width does not exceed 3.7 the mounting height.

Type 5. Symmetric Distribution — for mounting over the center of an area or over street intersections.

Through the joint efforts of the Edison Electric Institute Street Lighting Standardization Committee and the National Electrical Manufacturers Association Street Lighting Committee, we are gradually approaching some industry standards on equipment. This is something that has been needed for many years.

Many standards are being worked on by these two committees. In fact, there are some 60 projects in all. These cover voltage standardization, test standards, the standardization of luminaires themselves. The standardization extends to interchangeability of optical systems in heads. This means that regardless of the manufacturer of head, any other manufacturer, conforming to these standards, would be able to mount his optical system on the other head.

The mounting dimensions of sockets and receptacles in these heads are now all standardized at 4½-inch mounting screw centers. Sockets and receptacles themselves are standardized and interchangeable.

These heads are made with a variety of methods for mounting and wiring. In the high-voltage series externally wired unit, the bushings are designed to withstand 12 kv wet flashover test.

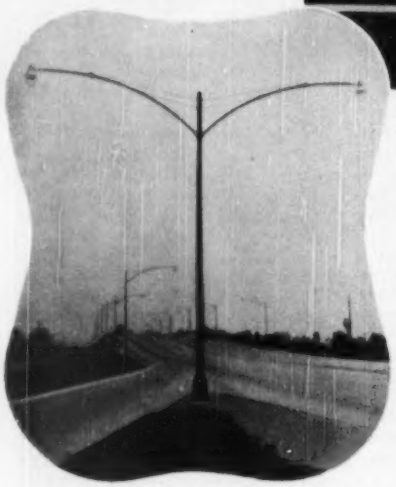
Photos on this and the preceding page show the variety of glassware to provide the various distribution patterns as set up under the A.S.A. Standards.

In these luminaires two different sizes are provided. However, both optical systems fit on these same heads. The

# Expressway lighting problem solved easily

## —WITH VERSATILE MONOTUBES

*A portion of the six-lane Expressway, Houston, Texas.*



*Example of double lamp mountings at ramp termini. Note, also, ground mounting of poles serving bridge in background.*

ENGINEERS who planned Houston's six-lane expressway had one over-all objective—safe, fast travel for approximately 40,000 vehicles daily. Proper lighting for heavy, after-dark travel is vital.

But the problem here was to maintain a 30-foot light source along the expressway's entire length, and ground mount all poles. This required many different pole lengths. Over bridges, the lengths ranged from 30 to 60 feet.

Monotube tapered steel poles solved the problem . . . perfectly. They could be provided in varying lengths, all strong enough to withstand a wind velocity of 120 mph. Their attractive uniformity of design gives a pleasing, unified appearance to the entire lighting system. The bracket arms support the most modern lighting units—help provide the most effective lighting for this busy expressway.

Monotubes are doing many other types of lighting jobs across the country. In residential areas, in business districts, along freeways, Monotubes are serving the cause of safety—and doing it economically.

For these rugged steel poles are easy to install and good for a lifetime of service. They require little if any maintenance, and are readily adaptable to any street lighting need.

Find out how much *better* modern lighting can be—with Monotubes. For information, write The Union Metal Manufacturing Company, Canton 5, Ohio.

**UNION METAL**

*Monotube Street Lighting Standards*

smaller of the two units is designed to take up to and including a 10,000-lumen series lamp or any of the mercury-vapor lamps. The larger unit is designed for the 15,000-lumen incandescent lamp. When we go to larger lamps in these totally enclosed units, we encounter a heat problem on the bracket cable of internally wired units. The temperature rise is higher than that allowable for standard grades of insulation. However, if standard rubber insulation or a low-temperature synthetic insulation is used, then it is recommended that a heat barrier bushing be used with 10,000-lumen lamps or 15,000-lumen lamps. This is a high-voltage porcelain bushing designed to withstand 19 kv dry flashover test. The bracket cable is brought into a cavity in the porcelain and then bare wires brought through two small holes up to the receptacle terminals. This porcelain bushing acts as a heat barrier protecting the rest of the cable and also acts as an insulator.

All manufacturers employ two basic methods of attaching the glassware to the main reflector. One is the automatic-hinge type that can be operated with one hand or by a stick from the ground. By simply tripping the latch, the globe will swing open. When slammed shut, it will latch itself.

The other method is the so-called permanent attachment, where the glass is attached to the reflector either by spinning or by clamping band. Here servicing of the lamp would be done by detaching the reflector and glassware from the head. It will be found that this latter method will require approximately twice the length of time to relamp as does the automatic latch unit. Also it is a two-hand operation, and necessitates the use of ladder or tower truck. Since in most locations it is necessary to wash glassware two or more times a year in order to maintain 70% or better of the initial light output, quite a saving will be incurred by using the automatic latch globe construction. When the globe is swing up in a reversed position, the globe ring lifts out on an open type of hinge. The glassware itself then can be washed on the truck or at some other location and a clean globe easily put on the luminaire in place. In washing the permanent-attach type of glassware it is necessary to detach the entire reflecting glassware assembly from the head and put up a clean unit. In washing the inside of the glass with a cleaning solution it is necessary to guard against getting this solution on the Alzak reflector, since many of these cleaning solutions will harm the Alzak reflector finish.

We have about reached the peak of efficiency in incandescent lamps. The best of these series lamps generates about 21 lumens per watt. If we go up in lamp size to the 25,000-lumen lamp or larger, we immediately encounter a terrific heat problem. The luminaires themselves, in order to radiate the heat, have to be so large that they become expensive to install and maintain. Therefore, our attention was turned toward the gaseous-discharge lamp, all of which are much higher in efficiency.

Of the three gaseous-discharge lamps, sodium, mercury and fluorescent, we find that we go through certain periods with each of these lamps. First, the emphasis seemed to be on the sodium lamp. However, it has been pretty much discarded as a light source for street and for highway lighting.

Present emphasis is on the mercury-vapor lamp. Three types are used for street lighting today. The A-H-1 lamp, 400 watts, 16,000 lumens, was the first to be used for street lighting. Some of these have been in street-lighting service in this country for 15 years. The next is the short-arc, or quartz, type of lamp, which is made in two sizes. The C-H-5 lamp is a 250-watt, 11,200-lumen lamp E-H-1 is a 400-watt, 21,000-lumen lamp. These two lamps can be burned either horizontally or vertically without the use of auxiliary arc-stabilizing equipment. They have been in service now for some 12 years and have proved themselves quite satisfactory for street lighting as well as other applications.

The fluorescent lamp is probably one of the future. This light source has already found great acceptance in the European countries, and in some of the South American countries. Considerable experimental work is being carried on here in this country. These lamps are in many ways ideal for street-lighting applications. The lamp itself being a low brightness source is good from a glare standpoint. From a cost standpoint, fluorescent is more expensive for a job than incandescent or mercury.

We must keep in mind at all times in the design and application of street lighting equipment that the prime purpose is to produce visibility distance on the street. And in the interest of sound economy we should provide this visibility distance with the equipment and light sources that will give us the best illumination per dollar invested. Not only capital investment but annual costs, year in and year out.

Street lighting is no longer just a light on the corner. It is scientifically designed and must be scientifically applied and operated.

We must remember that it is not the watts or the lumens or the candle power that constitutes good street lighting, but it is the manner in which these ingredients are mixed and delivered to the roadway that provides visibility distance.

## *New Whitehurst Freeway*

THE photograph of Whitehurst Freeway in the District of Columbia shows not only the appropriate lighting equipment but the functional beauty of the railing.

The units are Bethlehem Steel Standards, made as part of the structural steel job. There are 79 of these carrying General Electric luminaires equipped with Holophane refractors and 6,000-lumen lamps. Light center is at 24 feet, spacing 90 feet staggered arrangement.

The east end parapets are lighted by 37 General Electric parapet luminaires with 2,500-lumen lamps spaced 40 feet staggered. The west parapets are lighted by 36 Crouse-Hinds VCB-12 units with 200-watt lamps spaced 40 feet staggered.

In addition to the railings, there are wrought-iron downspouts and rain leaders, all totaling 7,500 feet of 4-inch, and 1,400 feet of 8-inch pipe, furnished by A. M. Byers Co., Pittsburgh 19, Penna.

New Whitehurst Freeway in Washington, D. C.

# RIGHT IN 1940, RIGHT IN 1950

## Fort Wayne is Glad . it Picked the TROLLEY COACH

The 130,000 people who live in the busy industrial city of Fort Wayne like good transportation. Ten years ago they got a special bonus in fast, convenient riding when the trolley coach became their basic transportation vehicle.

They were glad to get their trolley coaches in 1940. And today, after ten years of riding these quiet electrics, they still praise this modern method of transportation.

Fort Wayne Transit, Inc., has done a remarkable job of building its system to suit the needs of the people. Office workers can conveniently go home for lunch. Homemakers can make quick shopping tours to the downtown stores along bustling Calhoun Street. Factory workers in all sections of town get special plant-to-home service, without transferring, during peak hours. School children get to their classes safely and on time.

This modern vehicle has demonstrated its versatility to the people of Fort Wayne. And to the transit management it has demonstrated its economic versatility by never failing to earn a profit in ten years of service.

It's no wonder they like their trolley coaches in Fort Wayne!

1940 trolley coaches work with later models in accommodating rush-hour passengers leaving one of Fort Wayne's largest industrial plants.

4005-T

TROLLEY COACH AND STREETCAR LINE MATERIAL AND CAR EQUIPMENT

Ohio Brass

MANSFIELD, OHIO

Canadian Ohio Brass Co., Ltd., Niagara Falls, Ont.

# Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

### Annexation—Duty Imposed on City To Maintain and Repair Bridge in Area

Where city annexed portion of a county which had constructed bridge across railroad tracks, held city and railroad had to bear jointly expenses necessary for maintenance and repair of bridge. *Cincinnati, N. O. & T. P. Ry. Co. v. City of Lexington*, 86 Fed. Supp. 913 (U. S. D. C., E. D. Ky., Nov. 10, 1949).

### Blighted Areas—Act Providing for Redevelopment of—Constitutional

Where act provides for redevelopment of blighted areas and creates agency with power of eminent domain, held constitutional in so far as it is limited to elimination of conditions inimical public health, safety, and welfare. *Opinion to the Governor*, 69 Atl. (2d) 531 (R. I., Nov. 14, 1949).

### Buses—City No Authority to Alter Route

In action to have city ordinance declared void because it prescribed different route from that authorized by state Public Service Commission, held ordinance void and attempt by city to change route an usurpation of power conferred solely upon state commission. *Safe Way Motor Coach Co. v. City of Two Rivers*, 39 N. W. (2d) 847 (Wis., Nov. 15, 1949).

### Civil Service—Veterans' Preference

In action against civil service commissioners of City of Denver to determine plaintiff's rights under veteran's preference amendment to constitution, held amendment mandatory and veteran whose name was on existing promotional eligibility list did not waive right to preference if he made no demand prior to certification of others but did make demand prior to appointment of such persons. *Perry v. O'Farrell*, 212 Pac. (2d) 348 (Colo., Oct. 31, 1949).

### Civil Service Examination—Percentage as Passing Mark

Where Civil Service Commission of City of New York accepted candidates whose marks on test were less than 70% but more than 69%, held action of Commission expressly authorized by rules of Municipal Civil Service Commission. *Einhorn v. McNamara*, 92 N. Y. S. (2d) 765 (N. Y. Sup. Ct., N. Y. Co., June 16, 1949).

### Competitive Bidding—Not Necessary—City Doing Own Work

In action to enjoin construction work extending sewer system performed by city's own workmen on ground work being done without competitive bidding, held competitive bidding requirement did not prevent city from doing its own work. *Conley v. City of Shreveport*, 43 So. (2d) 223 (La., June 30, 1949). *Reh. den. Nov.* 7, 1949.

### Competitive Bidding—Not Necessary—Contract for Personal or Professional Services

Where city intended to extend and improve water-works system and contracted with firm of engineers to prepare and submit preliminary plans and estimates and also contracted with bond company to advise on financial questions, held city had power to contract for such services without competitive bidding. *City of Hazard v. Salyers*, 224 S. W. (2d) 420 (Ky., June 24, 1949). *Reh. den.* Dec. 9, 1949.

### Contract—Liability of City

In suit to recover amount due on contract for construction of sewerage system for city, held where plaintiffs not licensed to do business in city not entitled to invoke aid of equity to collect claim against city. *Bush Bldg. Co. v. Mayor and Aldermen of Town of Manchester*, 225 S. W. (2d) 31 (Tenn., December 17, 1949).

### Fireworks—Validity of Ordinance Prohibiting Sale of

On appeal from conviction of violating ordinance prohibiting sale, possession, or control of fireworks, held ordinance void because not in conformity to general laws of state and unreasonable in prohibiting conduct of lawful business. *King v. City of Louisville*, 42 So. (2d) 813 (Miss., Nov. 14, 1949).

### Gambling Devices—Pinball Machines

In action to enjoin city from arresting or molesting plaintiffs while possessing or operating pinball machines, held injunction denied because pinball machines were gambling devices. *Miller v. City of Spokane*, 211 Pac. (2d) 165 (Wash., Nov. 9, 1949).

### Incorporation—Signers of Petition Protesting Need Not be Residents

In proceeding for incorporation of Village of Milton Junction, held signers of petition protesting incorporation need not be residents of proposed incorporation area. *State v. Circuit Court of Rock County*, 39, N. W. (2d) 450 (Wis., Oct. 11, 1949).

### Lotteries—Arrest Without Warrant—In Presence of City Police

On appeal from conviction of assisting in conducting lottery in violation of ordinance, held arrest without warrant and subsequent search and seizure valid, since lottery was conducted in presence of arresting officers. *City of St. Louis v. Ward*, 223 S. W. (2d) 847 (Mo. App., Oct. 18, 1949).

### Milk—Denial of Permit to Distribute

In mandamus to compel issuance of permit to sell milk within city, held since plaintiff was properly rated by state control agency, denial of permit on ground city unable to inspect plaintiff's facilities was arbitrary. *City of Wewoka v. Rose Lawn Dairy*, 212 Pac. (2d) 1056 (Okla., Dec. 20, 1949).

### Occupation Tax—Validity of

In action for judgment declaring invalid ordinances imposing privilege tax on certain businesses and occupations, held statute permitting cities to impose such taxes a lawful delegation of taxing power. *Baldwin v. City of Martinsburg*, 56 S. E. (2d) 886 (W. Va., Dec. 6, 1949).

### Policeman—Subject to Rules and Regulations While on Leave

Where police officer of City of Newark was granted leave of absence and while on leave made several speeches indicating there was corruption, graft, and misconduct in police department, held while on leave he was not relieved of all obligations as police officer and he was subject to all rules and regulations of department. *Ward v. Keenan*, 70 Atl. (2d) 77 (N. J., Dec. 5, 1949).

### Public Parking Place—Ordinance Providing for Invalid

In action to enjoin defendant from constructing public parking place, held amendment to zoning ordinance did not become effective until published and portion of zoning ordinance granting unlimited powers to board to grant special exceptions was unconstitutional. *Gordon v. Town of Hempstead*, 93 N. Y. S. (2d) 250 (N. Y. Sup. Ct., Dec. 12, 1949).

### Public Purpose—Bond Issue to Assist Industry in Locating in City—Constitutionality of Ordinance

In action to enjoin City of Clarksville from contributing to cost of factory building for purpose of securing new manufacturing enterprise for city, held that ordinance authorizing issuance of city bonds for such purpose violated constitutional amendment prohibiting municipalities from granting financial aid for private enterprises. *Williams v. Harris*, 224 S. W. (2d) 9 (Ark., Oct. 31, 1949).

### Revenue Bonds—Power of City to Issue for Amusement Park Without Election Thereon

Where city proposed to execute mortgage to R.F.C. as security to revenue bonds which it proposed to issue to purchase and improve amusement park, held that mortgage and bonds did not create such an obligation as to require election under constitution if stipulated therein that liability was not general obligation of city and payment thereof was limited to earnings and revenue arising from park. *Opinion of the Justices*, 42 So. (2d) 348 (Ala., Oct. 7, 1949).

### Sidewalk—Slope in Grade Causing Injury—City Not Liable

In action for injuries sustained by falling on sidewalk at point where it declined into driveway, held since sidewalk located adjacent to one of busiest streets in City of Natchitoches had been in use for six years without accident or injury, there were no facts showing state of bad repair or existence of danger which would render city liable. *Chance v. Travelers Ins. Co.*, 43 So. (2d) 287 (La. App., Oct. 28, 1949).

### Signs—Necessity of Permit To Erect and Maintain

Where sign was erected and maintained for number of years without permit required by ordinance of City of Lawrence, held to constitute continuing violation of ordinance and punishable as such. *Commonwealth v. Capitol Theater, Inc.*, 89 N. E. (2d) 344 (Mass., Dec. 29, 1949).

### Streets—Validity of Ordinance Prohibiting Persons on Streets Between 1:00 and 5:00 a.m.

Where defendants were convicted of violating ordinance making it unlawful for any person to roam or be upon any street between hours of 1:00 and 5:00 a.m. without having and disclosing lawful purpose, and they appealed, held that ultimate issues tried by court in determining guilt or innocence of arrested persons are identical to issues which determine whether arrest was lawful so that ordinance was not unconstitutional as making legality of person's action depend upon opinion of policeman. *City of Portland v. Goodwin*, 210 Pac. (2d) 577 (Ore., Oct. 18, 1949).

# DETROIT found the ANSWER

In Detroit, Michigan, a six-month comparative test of five makes of automatic parking meters proved again that PARK-O-METER performance *excels in all ways.* The following tabulation, compiled from statistics supplied by the City Treasurer's office and the Bureau of Traffic Engineering *(Detroit),* tells the whole story. Park-O-Meters not only averaged more revenue per meter, they also were operated at less expense for service and maintenance. More than 1361 operations per service call! Nearly *three times better* than the nearest competitor. Service calls cost money, mean lost revenues, and cause public dissatisfaction. Can your city afford to install any parking meter other than PARK-O-METER?

| | | Rank | | Rank | | Rank | | Rank | | Rank |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of Meters | 2207 | Most | 2201 | 2nd | 2274 | 4th | 2115 | Least | 2111 | 1st |
| Total Revenue | $37,637.05 | 1st | $16,875.50 | Last | $34,026.75 | 3rd | $37,652.15 | 2nd | $32,646.45 | 4th |
| Average Revenue Per Meter | $17.05 | 1st | $7.67 | Last | $14.96 | 2nd | $17.03 | 2nd | $15.46 | 4th |
| Number of Times Used | 339,750 | 1st | 217,370 | Last | 290,210 | 3rd | 357,041 | 2nd | 332,933 | 4th |
| Number of Service Calls | 250 | Lowest | 1,210 | Highest | 630 | 2nd | 520 | 4th | 734 | 3rd |
| Operations Per Service Call | 1361.5 | 1st | 156.0 | Last | 474.0 | 2nd | 633.7 | 3rd | 369.4 | 4th |
| Number of Times Mechanism Rebuilt | None | 1st | Once | Tie 2nd | Once | Tie 2nd | Once | Tie 2nd | Once | Tie 2nd |
| Number of Times Mechanism Replaced | None | Tie 1st | Twice | Last | None | Tie 1st | Once | Tie 2nd | Once | Tie 2nd |
| Number of Times Cover Destroyed | None | Tie 1st | Once | Last | None | Tie 1st | None | Tie 1st | None | Tie 1st |

## PARK-O-METER has ALL 39 important features

Sincere city officials all over the nation . . . men who are honestly trying to serve their public . . . enthusiastically praise Park-O-Meter's new, simple yet complete check list that enables them to determine, POINT BY POINT, the desirable features of ALL MAKES of parking meters. Once they have it down in black and white they KNOW which meter will serve their purpose best.

### CHECK THEM YOURSELF

Send for your supply of check charts — compare all meters feature by feature, then choose. Write now — they're free, no obligation, of course!

OVER 600 CITIES *Know* WE KNOW HOW

# Conventions — When and Where

Conventions listed this month for the first time are indicated by an asterisk (*).

**June 8-10—Loveland, Colo.**
COLORADO MUNICIPAL LEAGUE. Annual Convention (Municipal Building). Exec. Dir., William A. Grelle, 327 Norlin Library, Boulder.

**June 9-10—Indianapolis, Ind.**
CENTRAL STATES SEWAGE WORKS ASSOCIATION. Annual Conference (Hotel Lincoln). Sec.-Treas., Paul W. Reed, 69 W. Washington Blvd., Chicago 2, Ill.

**June 12-15—Saskatoon, Saskatchewan**
CANADIAN FEDERATION OF MAYORS AND MUNICIPALITIES. Annual Convention (Hotel Bessborough). Exec. Dir., George S. Mooney, Office 22, Mount Royal Hotel, Montreal, Quebec, Canada.

**June 14-16—Saratoga Springs, N. Y.**
NEW YORK STATE CONFERENCE OF MAYORS AND OTHER MUNICIPAL OFFICIALS. Annual Meeting (Hotel Grand Union). Exec. Sec., Morgan Strong, 6 Elk St., Albany 7, N. Y.

**June 15-18—Hamilton, N. Y.**
NEW YORK STATE CITIZENS COUNCIL. Annual Meeting (Colgate University). Exec. Dir., H. Curtis Mial, 601 East Genesee St., Syracuse 2, N. Y.

**June 16-17—Walla Walla, Wash.**
ASSOCIATION OF WASHINGTON CITIES. Annual Meeting (Hotel Marcus Whitman). Ex.-Sec., Chester Biesen, 250 Smith Hall, University of Washington, Seattle 5, Wash.

**June 19-21—Ann Arbor, Mich.**
UNIVERSITY OF MICHIGAN INSERVICE TRAINING COURSE IN AIR POLLUTION. School of Public Health. Sec., Mr. H. E. Miller, School of Public Health, 109 South Observatory St., Ann Arbor, Mich.

**June 19-23—State College, Pa.**
THIRD ANNUAL PENNSYLVANIA SEWAGE WORKS SCHOOL. Directors, R. E. Stiemke, R. R. Kounts, Department of Civil Engineering, The Pennsylvania State College, State College, Pa.

**June 22-24—Lake Placid, N. Y.**
EASTERN ASSOCIATION OF FIRE CHIEFS. Annual Convention. (Hotel Marcy). Sec., Chief Charles E. Clark, Box 271, Wayne, Pa.

**June 26-27—Biloxi, Miss.**
MISSISSIPPI MUNICIPAL ASSOCIATION. Annual Convention (Hotel Buena Vista). Mgr., George Lemon Sugg, P. O. Box 531, Jackson, Miss.

**June 26-28—Philadelphia, Pa.**
PENNSYLVANIA STATE ASSOCIATION OF BOROUGHS. Annual Convention (Hotel Benjamin Franklin). Sec., Dr. H. F. Alderfer, Room 281, The Capitol, Harrisburg, Pa.

**June 26-30—Atlantic City, N. J.**
AMERICAN SOCIETY FOR TESTING MATERIALS. Annual Meeting. Asst. Sec., Robert J. Painter, 1916 Race St., Philadelphia 3, Pa.

**June 26-30—State College, Pa.**
THIRD ANNUAL PENNSYLVANIA WATER WORKS SCHOOL. Directors, R. E. Stiemke, R. R. Kounts, Department of Civil Engineering, The Pennsylvania State College, State College, Pa.

**June 28-30—Cincinnati, Ohio**
OHIO SEWAGE AND INDUSTRIAL WASTES TREATMENT CONFERENCE. Annual Meeting (Hotel Gibson). Exec. Sec., G. A. Hall, Ohio Department of Health, 301 Ohio Depts. Bldg., Columbus 15, Ohio.

**July 24-26—Reading, Pa.**
PENNSYLVANIA CHIEFS OF POLICE ASSOCIATION. Annual Meeting (Hotel Abraham Lincoln). Exec. Dir., Samuel Siegle, 430 State Theatre Bldg., Harrisburg, Pa.

**July 25-27—Rochester, N. Y.**
NEW YORK STATE ASSOCIATION OF CHIEFS OF POLICE. Annual Meeting (Hotel Sheraton). Exec. Sec., R. W. Morris, 204 State Tower Bldg., Syracuse, N. Y.

**Aug. 13-16—Los Angeles, Calif.**
AMERICAN SOCIETY OF PLANNING OFFICIALS. National Planning Conference (Hotel Biltmore). Exec. Dir., Walter Blucher, 1313 E. 60th St., Chicago 37, Ill.

**Aug. 21-23—State College, Pa.**
PENNSYLVANIA WATER WORKS OPERATORS' ASSOCIATION. Annual Conference. Sec.-Treas., R. E. Stiemke, Dept. of Civil Engineering, The Pennsylvania State College, State College, Pa.

**Aug. 21-24—Pasadena, Calif.**
ILLUMINATING ENGINEERING SOCIETY. Annual Convention (Hotel Huntington). Exec. Sec., A. D. Hinckley, 51 Madison Ave., New York 10, N. Y.

**Aug. 21-25—Syracuse, N. Y**
NATIONAL SHADE TREE CONFERENCE. Annual Meeting (Hotel Syracuse). Sec.-Treas., L. C. Chadwick, Ohio State University, Columbus, Ohio.

**Aug. 27-Sept. 2—Amsterdam, Hol.**
INTERNATIONAL FEDERATION FOR HOUSING AND TOWN PLANNING. Annual Congress (City University). Sec.-Gen., H. van der Weijde, Singel 453, Amsterdam C., Holland.

**Sept. 3-7—Atlantic City, N. J.**
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Convention (Hotel Ambassador). Sec., Keith L. Seegmiller, 1616 I St., NW., Washington 6, D. C.

**Sept 6-8—St. Paul, Minn.**
AMERICAN WATER WORKS ASSOCIATION—Minnesota Section. Annual Conference (Hotel St. Paul). Sec.-Treas., R. M. Finch, 518 Metropolitan Life Bldg., Minneapolis 1, Minn.

**Sept. 6-8—Asbury Park, N. J.**
GOVERNMENTAL RESEARCH ASSOCIATION. Annual Conference. Sec., Louis D. Brown, 30 Rockefeller Plaza, New York 20, N. Y.

**Sept. 7-8—Saranac Lake, N. Y.**
AMERICAN WATER WORKS ASSOCIATION—New York Section. Fall Meeting (Saranac Inn). Sec.-Treas., R. K. Blanchard, 50 W. 50th St., New York, N. Y.

**Sept 11-14—Pittsburgh, Pa.**
NATIONAL TAX ASSOCIATION. Annual Conference (Hotel William Penn). Sec., Ronald B. Welch, P. O. Box 1799, Sacramento 8, Calif.

***Sept. 12-15—San Francisco, Calif.**
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Conference (Civic Auditorium). James E. Jagger, Gen. Mgr., 22 E. 38th St., New York 16, N. Y.

***Sept. 13-14—Huntington, W. Va.**
AMERICAN WATER WORKS ASSOCIATION—West Virginia Section. Annual Convention (Hotel Prichard). Exec. Sec., J. B. Harrington, care of State Health Department, Charleston, W. Va.

**Sept. 13-15—Mitchell, S. D.**
SOUTH DAKOTA MUNICIPAL LEAGUE. Annual Meeting (Hotel Lawler). Sec., R. D. Falk, Law Bldg., Vermillion, S. D.

***Sept. 13-16—Salt Lake City, Utah**
UTAH MUNICIPAL LEAGUE. Annual Meeting (Hotel Newhouse). Exec. Dir., Tom McCoy, Newhouse Hotel, Salt Lake City, Utah.

**Sept. 17-20—Poland Springs, Maine**
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Convention. Sec., Joseph C. Knox, 609 Statler Bldg., Boston 16, Mass.

**Sept. 18-21—New York, N. Y.**
INTERNATIONAL MUNICIPAL SEWAGE ASSOCIATION. Annual Convention (Hotel Commodore). Sec., Irvin Shainsinger, 11 West 42nd St., New York 18, N. Y.

**Sept. 24-27——New York, N. Y.**
INSTITUTE OF TRAFFIC ENGINEERS. Annual Meeting (Hotel Commodore). Chairman, E. G. Wetzel, Port of New York Authority, 111 Eighth Ave., New York 11.

***Sept. 24-27—Omaha, Nebr.**
AMERICAN CHAMBER OF COMMERCE EXECUTIVES. Annual Meeting (Hotel Fontanelle). Exec. Sec., Elisabeth Glenn, 1615 H St. N.W., Washington, D. C.

**Sept. 25-27—Los Angeles, Calif.**
AMERICAN TRANSIT ASSOCIATION. Annual Convention (Hotel Biltmore). Gen. Sec., A. W. Baker, 292 Madison Ave., New York 17, N. Y.

**Sept 25-28—Dallas, Texas**
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Convention (Hotel Baker). Exec. Sec., Frank L. Brunckhorst, 30 North LaSalle St., Chicago, Ill.

***Sept. 25-28—Chicago, Ill.**
THE ASSOCIATION OF SCHOOL BUSINESS OFFICIALS. Annual Convention (Hotel Sherman). Sec.-Treas., H. W. Anderson, 306 E. Lovell St., Kalamazoo, Mich.

**Sept. 28-29—Santa Fe, N. M.**
AMERICAN WATER WORKS ASSOCIATION—Rocky Mountain Section. Annual Meeting (Hotel La Fonda). Exec. Sec., George Turre, Sanitary Engineer, Denver Water Dept., City and County Bldg., Denver, Colo.

**Oct. 2-6—Cleveland, Ohio**
NATIONAL RECREATION CONGRESS. Annual Meeting (Hotel Statler). Sec., T. E. Rivers, 315 Fourth Ave., New York 10, N. Y.

**Oct. 7-12—Colorado Springs, Colo.**
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Conference (Hotel Antlers). Exec. Sec., E. J. Kelly, 1424 K St., NW., Washington 5, D. C.

**Oct. 8-11—Milwaukee, Wis.**
NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Conference (Hotel Schroeder). Exec. Dir., Albert H. Hall, 730 Jackson Place, NW., Washington 6, D. C.

**Oct. 9-12—Washington, D. C.**
FEDERATION OF SEWAGE WORKS ASSOCIATION. Annual Meeting (Hotel Statler). Sec., W. H. Wisely, 325-26 Illinois Bldg., Champaign, Ill.

**Oct. 9-12—Atlantic City, N. J.**
NATIONAL ASSOCIATION OF ASSESSING OFFICERS. Annual Conference (Hotel Ambassador). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago 37, Ill.

**Oct. 15-18—New Orleans, La.**
AMERICAN WATER WORKS ASSOCIATION—Southwest Section. Annual Meeting (Hotel Roosevelt). Sec.-Treas., L. A. Jackson, Robinson Memorial Auditorium, Little Rock, Ark.

**Oct. 15-18—New York, N. Y.**
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Conference (Hotel New Yorker, Ninth Regiment Armory). Exec. Dir., D. F. Herrick, 1313 E. 60th St., Chicago 37, Ill.

***Oct. 16-19—Detroit, Mich.**
NATIONAL ASSOCIATION OF HOUSING OFFICIALS. Annual Meeting (Hotel Statler). Exec. Dir., J. M. Ducey, 1313 E. 60th St., Chicago 37, Ill.

***Oct. 23-25—Memphis, Tenn.**
AMERICAN WATER WORKS ASSOCIATION—Kentucky-Tennessee Section. Annual Meeting (Hotel Peabody). Sec.-Treas., R. P. Farrell, 420 Sixth Ave. N., Nashville, Tenn.

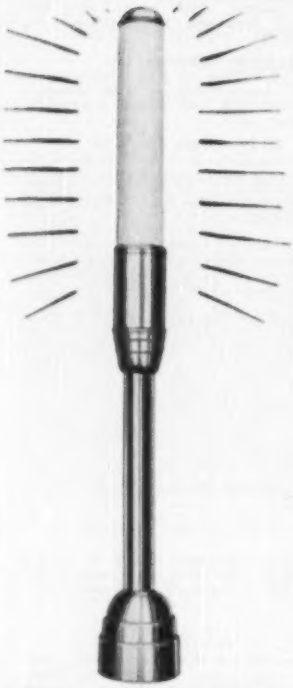
**Oct. 23-25—Charleston, S. C.**
AMERICAN WATER WORKS ASSOCIATION—Southeastern Section. Annual Meeting (Hotel Fort Sumter). Sec.-Treas., T. A. Kolb, 433 Wade Hampton Bldg., Columbia, S. C.

**Oct. 25-27—Detroit, Mich.**
AMERICAN WATER WORKS ASSOCIATION—Michigan Section. Annual Meeting (Hotel Detroit-Leland). Sec.-Treas., T. L. VanderVelde, Michigan Dept. of Health, Lansing 4, Mich.

# STOP, LOOK and BE SURE!

**CONSIDER THIS:** **Only ten years ago, inside fluorescents were new. Today old-type lighting fixtures are junked and all modernization programs specify fluorescents.**

**How fast will fluorescent history repeat on outdoor lighting? The obvious answer should cause any street-lighting committee to STOP, LOOK and BE SURE!**



True, the new fluorescent Post-Lites provide the first genuine "White-Way" . . . there is no whiter light. No lighting is more attractive, none is more efficient. They revolutionize both lighting and lighting costs.

The new fluorescent Post-Lites "radiate" light horizontally **at the level of use,** thereby quadrupling the amount of useful light at the traffic level.

The elimination of tall posts streamlines streets. The elimination of tall posts also saves the major cost of a street-lighting program.

## See Your Business District WHITE-WAY Lighted

This is so easy now. By appointment, a Post-Lite demonstration truck rolls into your town. . . . Post-Lites on portable bases are quickly spotted along your street. An entire block, including one street intersection, is White-Way lighted. The Lites are yours for the evening. Every interested person can have his say. Traffic officers can make visibility tests. Police officers can make distance apprehension tests. Merchants can judge White-Way lighting as a business asset. Shoppers will see how "white" light glorifies the natural colors of merchandise, cars, people and faces. Our lighting engineer will be on hand to answer questions. The party is on us and your responsibility will be relieved efficiently, pleasantly! Now you can BE SURE, one way or another. Our "Street-Lighting Bulletin 250" just off the press, will bring you the interesting details. Write for your copy now.

**WHITE-WAY**

***Post***

Post-Lites for streets are built in three highly perfected models; each model available in three lamp sizes for every street-lighting need. Models are available for converting any type old posts in only two hours of labor per post. Old post conversions are illustrated in Street-Lighting Bulletin 250. Write for a copy.

Every Post-Lite bears the label of approval of the Underwriters Laboratories, Inc.

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NOTE: Night-time photo of a store on a Post-Lited street. All inside lights are off. The entire illumination is from the Post-Lited street. An example of the day-lighting efficiency of light that radiates horizontally at the traffic level.

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***Oct. 25-28—San Diego, Calif.**
AMERICAN WATER WORKS ASSOCIATION—California Section. Annual Conference. Sec., H. C. Medbery, Engineer of Water Purification, San Francisco Water Dept., Millbrae, Calif.

**Oct. 26-28—Atlantic City, N. J.**
AMERICAN WATER WORKS ASSOCIATION—New Jersey Section. Fall Meeting (Hotel Madison). Sec.-Treas., C. B. Tygert, Box 178, Newark 1, N. J.

***Nov. 1-3—Wilmington, Del.**
AMERICAN WATER WORKS ASSOCIATION—Chesapeake Section. Annual Conference (Hotel Du Pont). Sec.-Treas., C. J. Lauter, 5902 Dalecarlia Place, Washington 16, D. C.

***Nov. 26-30—Houston, Texas**
INTERNATIONAL CITY MANAGERS' ASSOCIATION. Annual Conference (Hotel Shamrock. Exec. Dir., Clarence E. Ridley, 1313 E. 60th St., Chicago 37, Ill.

***Nov. 27-30—Atlanta, Ga.**
CIVIL SERVICE ASSEMBLY OF THE UNITED STATES AND CANADA. Annual Conference (Hotel Biltmore)). Dir., Kenneth O. Warner, 1313 E. 60th St., Chicago 37, Ill.

***Nov. 30-Dec. 2—Tucson, Ariz.**
AMERICAN WATER WORKS ASSOCIATION—Arizona Section. Annual Convention (Hotel Pioneer). Sec., Mrs. Helen Rotthaus, State Dept. of Health, State Capitol, Phoenix, Ariz.

# City Planning Emphasized At Inter-American Congress

By ANATOLE A. SOLOW, *Chief*
*Section of Housing and City Planning*
*Pan American Union*
*Washington, D. C.*

THE ARCHITECTS in Latin America constitute an influential professional group which has fostered inter-American cooperation for a long time. This was evidenced once more by the success of the Seventh Pan American Congress of Architects, which was held in Havana, Cuba, April 10-16, and which was attended by 680 delegates from 19 American Republics. Considering the long traveling distances involved, it is remarkable that such countries as Argentina, Brazil, Mexico, Uruguay, and Venezuela sent over 20 delegates each.

The largest foreign delegation was from the United States and consisted of 67 members headed by Ralph Walker, President of the American Institute of Architects.

The most significant event of the Congress was the establishment of the *Pan American Federation of Architects' Associations* (FPAA) with headquarters in Montevideo, Uruguay. The FPAA will be a permanent inter-American professional organization with which all national societies of architects may affiliate. Its principal purpose will be to act as a secretariat for future Pan American Congresses of Architects.

### City Planning Emphasis

At the technical level, the Congress dealt with six subjects: Education and Training, City Planning, Evolution of Contemporary Architecture, Social Aspects of Low Cost Housing, Re-inforced Concrete, and Professional Practice in Relation to Existing Legislation. Numerous resolutions were passed on each subject, which will be transmitted to the respective governments. It is interesting to note that Latin American architects consider city planning as an integral part of their profession and feel strongly that they should lead the planning teams in each country. According to one resolution, sociology, economy and city planning legislation should be included in the architectural curriculae. Several resolutions recommended that the Pan American Union expand its activities in the inter-American housing and planning field.

An outstanding feature of the Congress was the Inter-American exhibit of plans and photographs, which occupied 30,000 square feet of wall space, the U. S. submitted 600 panels including master plans of San Francisco and Philadelphia and the proposed Civic Center of Chicago, and received the first prize, followed by Mexico and Cuba. City planning and housing featured prominently in the exhibit. Of outstanding interest were the city planning studies of Venezuela, the national housing study of Uruguay, and the new housing projects of Mexico. The impression which I carried away is that far too little is known in the States about the dynamic progressive and aesthetically excellent housing developments which have gone up in many cities of Latin America during the past five years.

The Congress was opened by the President of Cuba, who announced a large-scale low-cost housing program for Cuba in his inaugural address. The Congress was well and lavishly organized by an Executive Committee of the Cuban Society of Architects (Colegio de Arquitectos) headed by Mr. Horacio Navarrete. Several field trips were made to see the excellent colonial architecture of Havana and many outstanding contemporary buildings which have been constructed recently in the fast-growing suburban areas of the city. The next Pan American Congress of Architects will be held in Mexico in 1952.

## *Planning and Zoning*

(*Continued from page* 148)

the Singer Sewing Machine Company for a retail store) complained that, as a result of the sign, neither the Singer establishment nor its smaller illuminated sign could be seen from anywhere further north on Main Street, at least along the same side of the street. When the Bank brought an action to compel removal of the sign, defendant (a Texas corporation) removed the case to Federal Court, and argued that the sign was not a nuisance, did not obstruct anything, and caused no damage to anybody—and further that plaintiff was guilty of laches.

The Court found that the sign blocked the view of the bank building for most of the block, even on the opposite (and busier) side of the street, and destroyed much of the advantage of the corner lot.

"The sign, as constructed, obstructs the view of the plaintiff's building, interferes with its right to air and ventilation, and has caused and will cause plaintiff to suffer substantial damages.

"The size, position, shape, and character of the sign has a tendency to cheapen the look of plaintiff's banking building, destroying much of its look of stability, and reducing the advertising value of its solid type of architecture."

The sign was also found to block the view of the projecting sign from the Singer store. The Court then summarized the law on the subject as follows, and accordingly granted an injunction.

"The abutting owner of a lot on a public street has an easement of light and air, to egress and ingress, to view thereof from the street, and of prospect therefrom to the street."

Both the problem and the approach adopted in this case are rather unusual in American law, although there are a number of English cases dealing with an easement of light and air. While the objectionable aspects of projecting signs are obvious, the approach by individual litigation does not appear very promising. If signs projecting over the sidewalk are permitted at all, it is practically impossible to guarantee an unobstructed view of every sign and every building.

## *Truck Shipments*

(*Continued from page* 87)

the freight for local delivery in the city.

Meanwhile, flats, each bearing a blackboard giving the destined loading-berth number, are sent around the loading floor in accordance with the routing instructions by means of an overhead tow-chain system, a sort of freight merry-go-round. A telescopic mast with a special hooking device links the flats to the chain conveyor.

The procedure described is followed in handling freight received at the terminal from connecting lines, pick-up-and-delivery contractors, local and short-haul truckmen, and shippers' trucks for the account of over-the-road carriers.

The object was to cut down paper work and communication time for fast and efficient operation. The station with its all-electric Teleregister system went into operation on November 28, 1949. As a feather in the wind, one Connecticut trucking company, using six carriers on the New York run, is saving 25 miles per day and 5 hours on every truck through use of the terminal. This adds up to a total saving of 150 miles and 30 hours for these six trucks alone.

# The Martin Red Ball has no "blind" spots

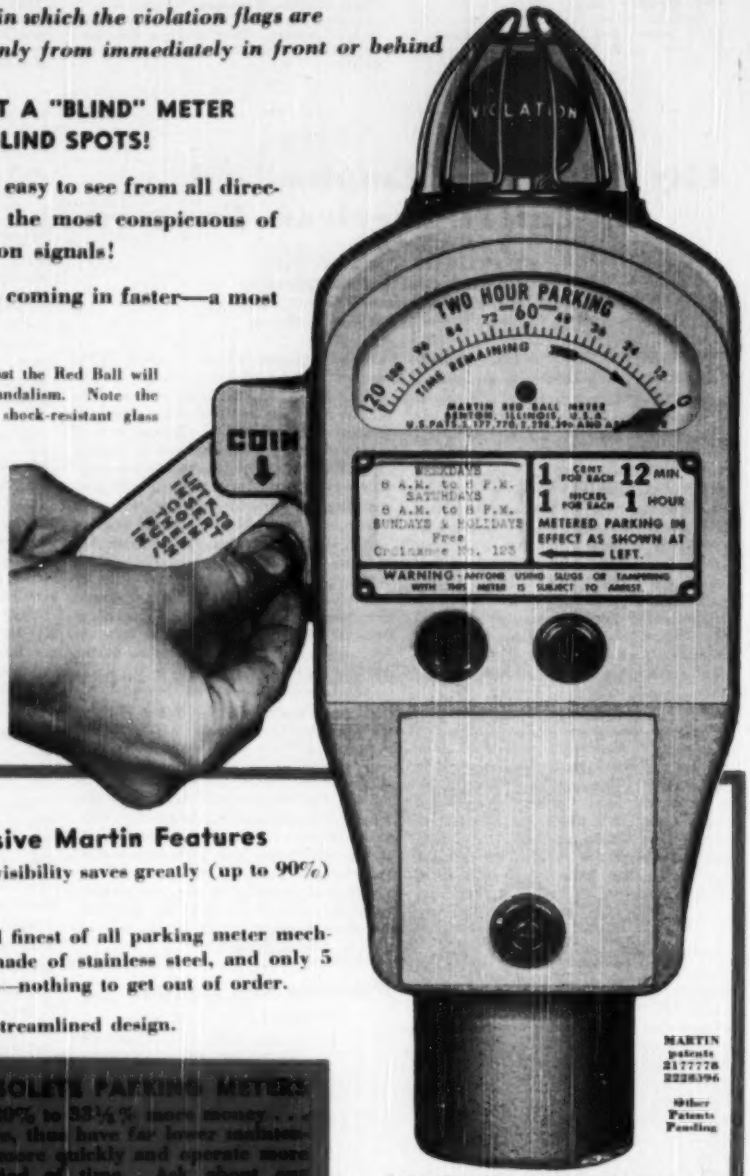
*"Blind" meters are those in which the violation flags are difficult to see—visible only from immediately in front or behind*

## THE MARTIN IS NOT A "BLIND" METER IT HAS NO BLIND SPOTS!

**Martin's large Red Ball is easy to see from all directions, 500 feet away—is the most conspicuous of all parking meter violation signals!**

**And it keeps parking fees coming in faster—a most important point.**

Martin engineers have made sure that the Red Ball will have adequate protection from vandalism. Note the strong steel bars and extra heavy shock-resistant glass dome.


VIOLATION
TWO HOUR PARKING
72 60 48
TIME REMAINING
120 90 60 30 0
COIN
1 CENT FOR EACH 12 MIN
1 NICKEL FOR EACH 1 HOUR
METERED PARKING IN EFFECT AS SHOWN AT LEFT.
WARNING - ANYONE USING SLUGS OR TAMPERING WITH THIS METER IS SUBJECT TO ARREST

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**The 98% clog-proof Martin is a high-income meter, not affected by dirt or weather of any kind. Neither rain, ice, sleet or snow can penetrate the covered Martin coin receiver, to keep coins from being deposited.**

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- **Beautiful, modern, streamlined design.**

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MARTIN patents 2177778 2228396 Other Patents Pending

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# Municipal and Civic Publications

## The Role of Highways

HIGHWAYS IN OUR NATIONAL LIFE—*Edited by Jean Labatut and Wheaton J. Lane. Princeton University Press, Princeton, N.J.* 1950. 506 *pp.* $7.50.

Forty-eight contributors from widely diversified fields have combined to make this an unusual and thoughtful analysis of the role of highways in current society.

Engineers, architects, regional and city planners, economists, sociologists, safety and traffic specialists, even landscape architects and lighting experts are represented. Historians set the work in historical perspective in chapters discussing the highway in the ancient Near East, China, the Roman Empire, modern Britain, and early America. Following this, economists and sociologists study problems of land use, financing, and the interrelation of the highway with its environment. The development of cities and urban-rural relationships are examined, together with the problem of a permanent right-of-way in a changing environment.

Another group of chapters deals with the design of highways and their intersections, with special attention to expressways and controlled-access highways. Highway construction, landscaping, and maintenance are considered, and the influence of climate receives special attention.

## Experiment in Community Organization

SMALL TOWN RENAISSANCE, A STORY OF THE MONTANA STUDY—*By Richard Waverly Poston. Harper and Brothers, 49 E. 33rd St., New York, N.Y.* 1950. 231 *pp.* $3.

The message of this book is that perhaps there are no means by which the people living in America's small communities could make a more worth-while contribution to themselves, and to the stability and welfare of our nation, than through a concerted effort to improve and strengthen their own communities.

The techniques of The Montana Study are to enlist the participation of a true cross-section of community citizens, to sit down together once each week to study and objectively analyze the past, present, and future of their community. Out of this group process local problems will be discovered, the causes and reasons behind them, and the means by which they may be solved. The author points out that the history, the problems, the causes, and the means of solution will be different in each community, yet the principle of objective study as a community—not as a pressure group or a special clique—will be the same. But the point of departure is study, not action—for intelligent action can only come from long, arduous, and systematic study, which embraces all levels of local society in one unified effort for the common welfare.

## Should Municipal Bonds Be Taxed?

TAXING MUNICIPAL BOND INCOME—*By Lyle C. Fitch, Bureau of Business and Economic Research, University of California. University of California Press, Berkeley and Los Angeles.* 1950. 161 *pp.* $2.50.

The author sheds much light rather than heat on the issues involved in possible federal taxation of the interest on state and local indebtedness. The possibilities for a justifiable and mutually acceptable compromise are fully explored. The two main conclusions of the study are: (1) that the private "subsidies" to high-income bondholders arising out of the present form of tax exemption should be abolished; and (2) that there is not a clear case for abolishing the borrowing "subsidy" to the states and localities. The report, with its practical outlook, and its references and bibliography, should be of special interest and value to municipal and finance officials who want to explore the problem further.

## Lighting and Power Service

SILENT SENTINELS — *Westinghouse Protective Relays. Westinghouse Electric Corporation, 306 Fourth Ave., P.O. Box 2099, Pittsburgh 30, Pa.* 236 *pp.* $3.

A great deal of the continuity of electric lighting and power service for which the electrical industry is noted is caused by the liberal use of protective relays. They receive their technical due in this handsome, illustrated volume entitled "Silent Sentinels."

Protective relays ordinarily are used to protect large circuit breakers, of which there are some 30,000 in municipal electric plants, and many more in water and sewage plants. The relays initiate the tripping action of the breakers in case of short circuits and grounds, overloads, overvoltages and undervoltages, unbalanced phases, overspeed, and reverse direction of phases.

The purpose of the breakers is to protect the system apparatus against the abnormal conditions named above. The protective relays must be able to locate faults and trip only the breakers on circuits directly connected to the faulted equipment. This "selectivity" is achieved by the relay's sensing abnormal characteristics such as increased current, reduced voltage and temperature rise in electrical equipment.

The first edition of "Silent Sentinels" appeared in 1924. This latest edition includes the most recent developments in the design and application of protective relays.

## Smoke Control Reports

REPORT OF SESSIONS, SMOKE PREVENTION ASSOCIATION OF AMERICA—*42nd Annual Meeting, May,* 1949. *John Paul Taylor, Publisher, 520 Pleasant St., St. Joseph, Mich.* 1950. 186 *pp.* $2.

A wide range of subjects are covered in the 23 papers presented in this book on smoke control and the prevention of air pollution. Useful standards and procedures are described in detail, so that much of the technical material will be of direct interest to municipal officials concerned with the operation of smoke control programs. A model smoke ordinance is discussed. Other papers include discussions of "Operation of Incinerators to Dispose of Municipal Waste," "Administrative Policies and Procedures Used in Los Angeles County," "How Effective Committee Work Can Support an Air Pollution Control Ordinance," and many others.

## Municipal Airport Report

ADMINISTRATION AND FINANCING OF MUNICIPALLY OWNED AIRPORTS IN MICHIGAN—*By Eugene C. Moody. Michigan Municipal League, 205 S. State St., Ann Arbor, Mich. Information Bulletin No.* 63. 1950. *Mimeo.* 24 *pp.* $1.50.

A particularly informative research report which should be of value both to the municipality owning an airport and to the municipality which is considering ownership. There are 58 municipalities in Michigan which already own airports, and this study is based on findings with regard to their operation. The tables in the report will enable a municipality owning an airport to compare the costs and revenues of its own airport with others, and a municipality considering the acquisition of an airport will be able to evaluate the probable costs, operating expenses, and possible revenues of such an airport.

## Local Taxes in 1949

LOCAL TAX LEGISLATION IN 1949—*March* 1950 *issue of* Tax Policy. *Published by Tax Institute, 150 Nassau St., New York 7, N.Y.* 12 *pp. 25 cents per single copy.*

A report on state legislation affecting local taxes and a review of the taxes imposed by localities in 1949 are contained in this pamphlet.

## Federal Services to Cities and Towns

FEDERAL SERVICES TO CITIES AND TOWNS: AN ALPHABETICAL LISTING—*By Robert H. Blanford and Donah W. Hanks, Jr. American Municipal Association, 1313 East 60th St., Chicago 37, Ill.* 1950. 82 *pp.* $5.

A highly useful, comprehensive listing of several hundred concise statements under alphabetized subject entries on federal services available to municipal governments, which has been compiled by two top researchers of the American Municipal Association's Washington staff especially for the benefit of municipal officials. Without a hand-book of this sort, the existence of many useful federal services would escape the most experienced local officials.

The listings have been carefully edited and have been kept brief to save the time of the user. The authors explain that, as a general rule, it is advisable to communicate with the local office or nearest field office before contacting the national office of the agency which is listed as a supplier of the service. All local or regional Federal agency field offices are listed in the appendix.

A review of the book makes it plain how closely knit is the web of government, and therefore how great is the need for continuing attention to the problem of rational assignment of revenue sources and functions to eliminate intergovernmental frictions and encourage cooperation among all government units.

## Municipal Public Relations

THE CITY TELLS ITS STORY—*By Henry Davis Nadig. Selective reprint, published by* THE AMERICAN CITY, 470 *Fourth Ave., New York 16, N. Y. May* 1950. 12 *pp.* 50 *cents per single copy; 2 to 9, 40 cents; 10 to 19, 30 cents; 20 and over, 25 cents; $15 per hundred for quantity orders.*

A selective illustrated reprint of items published April 1947 to April 1950 in a regular two-page monthly department of THE AMERICAN CITY. Local governments have a great stake in the development of public relations techniques. This lively, readable pamphlet contains numerous new ideas and information on the necessity of a municipal public relations concept, relations with the press, annual reports, the use of radio, and organization of references.

## Action Needed on Federal Legislation

PENDING FEDERAL LEGISLATION—YOUR STAKE IN IT — *Washington Newsletter, American Municipal Association, 522 Transportation Bldg., Washington 6, D.C. April* 1950. 12 *pp.*

A comprehensive, well-compiled report on the numerous pieces of federal legislation affecting municipalities which still await action in Congress. On each measure, the report gives the House and Senate bill numbers, summarizes the municipal interest, controversial aspects, the AMA position, status of legislation, and tells how municipal officials can effectively express their opinions.

## Cincinnati Civic Textbook

CINCINNATI, THEN AND NOW—*By Iola O. Hessler. Published for Cincinnati Schools by The League of Women Voters of Cincinnati.* 1949. 163 *pp.*

An excellent booklet on Cincinnati's development, its personalities, government, services, and plans for the future; it is being used in the eighth- and ninth-grade civics classes of all the public schools and some private and parochial schools. The booklet was written at the request of the Cincinnati Board of Education as a result of an investigation made some years ago by the League of Women Voters, on the teaching of local government.

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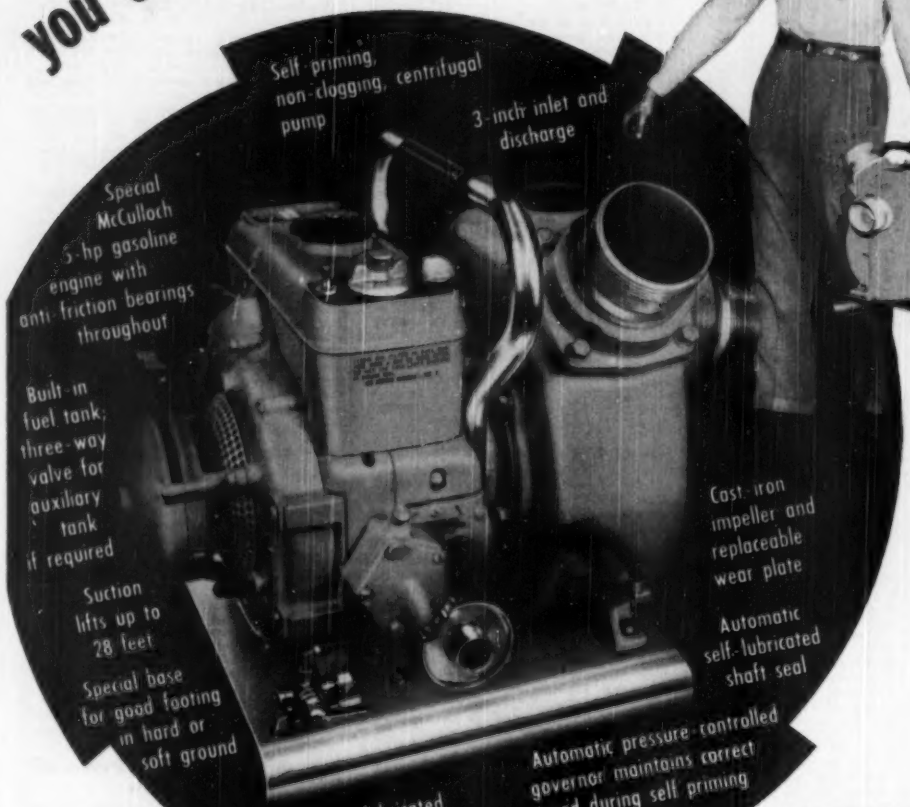

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|---|---|---|---|---|
| 30 ft. | 250 GPM | | | |
| 35 ft. | 245 | 210 GPM | 170 GPM | |
| 30 ft. | 235 | 205 | 165 | 130 GPM |
| 40 ft. | 215 | 190 | 160 | 125 |
| 50 ft. | 185 | 165 | 145 | 120 |
| 60 ft. | 135 | 130 | 125 | 105 |
| 70 ft. | 60 | 65 | 65 | 60 |

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## 1950 Municipal Yearbook

THE MUNICIPAL YEAR BOOK, 1950—*International City Managers Association, 1313 East 60th St., Chicago 37, Ill. June, 1950.* $10.

The 17th Edition of *The Municipal Year Book* probably the most valuable and useful single reference source on municipal government trends and activities in the United States, is off the press this month, with its regular comprehensive features brought up-to-date, and several new ones added. The editors of the volume proclaim that it contains more than 100,000 facts about 2,042 cities, but the significant part of this statement is that the information is highly organized so as to be immediately on tap when particular municipal problems arise.

Among the new features of the 1950 edition are sections on health, police, fire, library standards and garbage collection practices. The sections include information and detailed data on the type of health units serving cities over 10,000 population; shifts on which one-man patrol cars are used, extent to which foot patrol is used and where, and the use of radio in patrol cars; the number of pieces of different types of fire apparatus in active service in each city and the extent to which radio equipment is used on such apparatus; a list and analysis of standards or yardsticks used in public library service and the extent to which cities are meeting these standards; and data for nearly 200 cities on garbage-collection and disposal practices.

Regular features include the summary of municipal highlights during the past year, municipal annexations, salaries of chief municipal officials and pay rates for selected jobs; municipal finance developments; individual section reports on major fields of municipal activity, and comprehensive directories of officials. In addition, for each major activity, there are listings of new books and reports issued in 1949, selected model municipal ordinances, and an analysis of court decisions affecting cities.

## Critique of Planning Principles

DEBUNK: A CRITICAL REVIEW OF ACCEPTED PLANNING PRINCIPLES — *Council for Planning Action, Room 7-341, 77 Massachusetts Ave., Cambridge 39, Mass. 32 pp. 35 cents.*

A well-edited report of a symposium conducted at the Littauer Center, Harvard University, and sponsored by the Council for Planning Action, composed of students and faculty in the planning departments at Harvard, M.I.T., and planners practicing in the Boston area. The report includes the talks by Joseph Hudnut, Hans Blumenfeld, John M. Gaus, George K. Zipf, Martin Wagner, Catherine Bauer, Paul and Percival Goodman, Sven Markelius, and Jose L. Sert.

## Social Hygiene and Police

SOCIAL HYGIENE AND THE POLICE — *Reprint from* Journal of Social Hygiene, *published by the American Social Hygiene Assn., Inc. 1790 Broadway, New York 19, N. Y. 20 pp. February* 1950. *10 cents.*

This reprint contains the papers presented in the Report of the Committee on Social Protection, of the International Association of Chiefs of Police. Recommendations are made on various phases of law-enforcement work as it relates to social protection. Police administrations are urged to take a more active interest in and begin a more vigorous program to combat the ever-creeping racket of prostitution.

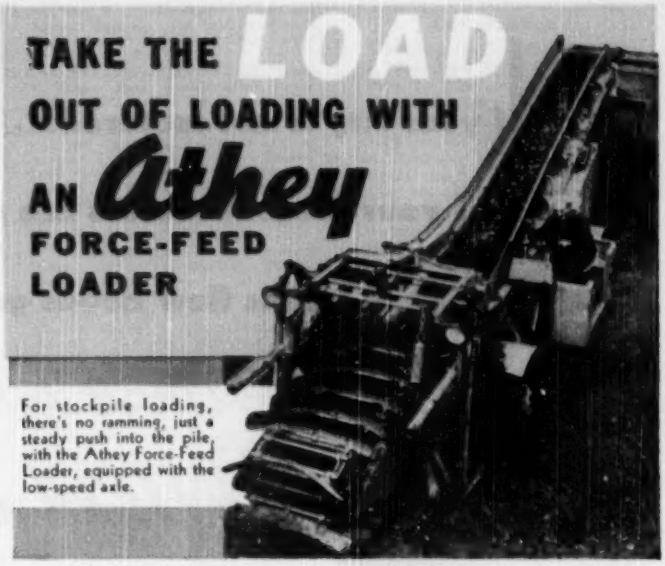
## Planning and Housing Reports

BALTIMORE COUNTY, MD.—Subdivision Regulations for Baltimore County. Baltimore County Planning Commission, Towson, Md. Mimeo. 21 pp.

——Trunkline Motorways for Baltimore County. Baltimore County Planning Commission, Towson, Md. Oct. 1949. Mimeo. 11 pp.

BERGEN COUNTY, N. J.—Annual Report of Progress, 1949. County Planning Board, County of Bergen, Hackensack, N. J. Mimeo. 16 pp.

CHESTER, PA.—Accomplishments in 1949 and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The low-speed axle provides the all-round answer for all-round loading problems with these advantages. Loading speeds from .27 to 1.73 m.p.h. fit the loader to *better* stockpile-loading and *greater* production. Power is tied to traction, with the use of larger, single rear tires . . . every one of the "horses" in the heavy-duty industrial engine is put to use. The use of larger tires, with the heavy-duty axle, also increases flotation and allows the loader's use in any material. The greater torque capacity of the low-speed axle reduces the stress and strain of tough jobs and so prolongs the work-life of the loader. High travel speeds reduce travel time between job-sites. These advantages pay off wherever greater production, better traction and improved flotation are first needs.

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a Tentative Program for 1950. Chester City Planning Commission. Prepared by the Government Consulting Service, Institute of Local and State Government, University of Pennsylvania, 3437-39 Woodland Ave., Philadelphia. Dec. 1949. Mimeo. 5 pp.

DAYTON, OHIO—Planning Review 1949. City Plan Board, 530 Municipal Building, Dayton. Graphs. Maps. 13 pp.

DETROIT, MICH.—The Manufacturing Economy of the Detroit Region, Part I (revised) Compared to National Manufacturing and Major Metropolitan Areas. By Paul M. Reid, Planning Analyst. Detroit Metropolitan Area, Regional Planning Commission, Detroit. March 1950. Mimeo. Tables. 21 pp.

LITTLE ROCK, ARK.—Annual Report 1949. Pulaski County Planning Board, Room 405 Courthouse, Little Rock. Map. Illus. Mimeo. 17 pp.

LOS ANGELES COUNTY, CALIF.—The Regional Planning Commission's Annual Report, 1948-1949. County Engineering Building, 103 West Second St., Los Angeles 12. Maps. Tables. 41 pp.

MINNEAPOLIS, MINN.—Annual Report 1949. Minneapolis Housing and Redevelopment Authority, Room 409-A, City Hall, Minneapolis 15. Mimeo. 9 pp.

NEW YORK—Housing and Related Research in the State of New York, Oct. 1948-Nov. 1949. New York State Division of Housing, Bureau of Research and Statistics, Albany. Feb. 1950. Mimeo. 30 pp.

OAKLAND, CALIF.—The Transit Problem in the East Bay, a Preliminary Report of the Mayors and Managers of the Cities of the East Bay. Oakland City Planning Commission Staff, Oakland, Calif. March 15, 1950. 55 pp.

PHILADELPHIA, PA.—Economic Base Study. Philadelphia City Planning Commission, Market Street National Bank Building, Market and Juniper Streets, Philadelphia 7. Aug. 1949. Tables. Graphs. 79 pp.

——Redevelopment Authority of the City of Philadelphia. Annual Report for 1949. Board of Education Building, Philadelphia 3. Illus. 32 pp.

TORONTO, CANADA—Third Report and Annual Plan. Toronto City Planning Board, Room 333, City Hall, Toronto. June 21st, 1949. Maps. Tables. 52 pp.

UNITED STATES—Government Aids to Internal Industrial Development. Part IX. Mimeo. 42 pp.

——Statistical Plans and Programs. Part X. Mimeo. 38 pp.

——Economics of the Tourist Industry. Part XI. Mimeo. 22 pp.

——Action on the Hoover Commission Proposals. Part XII. Mimeo. 14 pp.

——Ore Reserves and Location of the Steel Industry. Part VII. Proceedings of the Third Annual Technical Seminar, Association of State Planning and Development Agencies, U. S. Department of Commerce. July 26-29, 1949. Association of State Planning and Development Agencies, 1313 East Sixtieth St., Chicago 37, Ill. Area Development Division, Office of Domestic Commerce, U. S. Department of Commerce, Washington 25, D. C.

WASHINGTON, D. C.—Sick Children. Washington Housing Association, 1906 M St., N.W., Washington 6, D. C. April 1950. Illus. Tables.

## Other Reports Received

AMES, IOWA—333 Questions and Answers for Firemen. Bulletin 119, Engineering Extension Service, Iowa State College, Ames. 1950. 25 cents.

ATHOL, MASS.—Annual Report of the Water Commissioners for year ending Dec. 31, 1949. Tables. 21 pp.

BROOKLINE, MASS.—Annual Report of the Town Officers of Brookline, Mass., for year ending Dec. 31, 1949. Tables. 524 pp.

BUFFALO, N. Y.—Moving People in Downtown Buffalo. Traffic, Transit Improvements. Part 1. Prepared by Division of Safety, City of Buffalo. March 1950. Illus. Maps. 10 pp.

CHAPEL HILL, N. C.—Department of City and Regional Planning. The Graduate School, The University of North Carolina Record. Jan. 1, 1950. 19 pp.

DETROIT, MICH.—Annual Report 1949. Board of County Road Commissioners, Wayne County, 5800 Cadillac Towers, Detroit 26. Illus. Tables. 111 pp.

——Rapid Transit Plan for Metropolitan Detroit 1949. Report by Rapid Transit Commission; Technical Advisor, The Conway Corp. Available from Municipal Reference Division, Detroit Public Library, 1765 Water Board Building, Detroit 26. 115 pp.

ELMIRA, N. Y.—Annual Report 1949. Elmira Water Board, Elmira. Illus. 36 pp.

GARY, IND.—Annual Report Sewage Treatment Works, 1949. Gary Sanitary District, Mimeo. Tables. 56 pp.

KALAMAZOO, MICH.—Perspective for Business Expansion. By Julius T. Wendzell. Published by The W. E. Upjohn Institute for Community Research, Kalamazoo. Aug. 1949. 16 pp.

LITTLE ROCK, ARK.—Statement of Financial Information. City of Little Rock 1949. Report by City Clerk. Illus. Tables. 48 pp.

LONG BEACH, CALIF.—Annual Report of the Water Department, 1948-1949. City of Long Beach. Tables. Illus. Graphs. 76 pp.

LOS ANGELES, CALIF.—Western Governmental Research Association. Ninth Annual Conference, 1949 Proceedings. Office of the Secretariat, Box 13, Library Building, University of California, Berkeley. Mimeo. 74 pp. $1.

MICHIGAN—A Bibliography of Michigan's Economy. No. 2. Ju'y through December 1949. Compiled by the Research Division, Michigan Department of Economic Development, Lansing 15. Mimeo. 18 pp.

NEWARK, N. J.—Municipal Yearbook 1948-1949. Prepared under the direction of Harry S. Reichenstein, City Clerk. Illus. 194 pp.

NEW ENGLAND—Annual Report of the New England Interstate Water Pollution Control Commission, June 30, 1949. 325 State Office Building, Providence, R. I. 12 pp.

NEW LONDON, CONN.—Financial Reports for year ending Sept. 30, 1949. City of New London. Tables. 44 pp.

NEW YORK, N. Y.—The Port of New York. The Port of New York Authority, 111 Eighth Ave., New York 11. Mimeo. Folders.

NEW YORK—Garbage Collection Practices in New York State Municipalities. Data gathered by the N. Y. State Conference of Mayors, Bureau of Municipal Information, Albany. Jan. 2, 1950. Mimeo. 32 pp.

PALO ALTO, CALIF.—Annual Report for year ending June 30, 1949. City of Palo Alto. Tables. 138 pp.

PLEASANTVILLE, N. Y.—Annual Report for year ended Feb. 28, 1950. Graphs. Tables. Charts. 20 pp.

SAN FRANCISCO, CALIF.—Annual Report of the Department of Public Works. City and County of San Francisco, 260 City Hall, San Francisco 2. June 1949. Illus. Tables. 179 pp.

SAN LEANDRO, CALIF.—The Master Street, Highway and Parking Plan. 1950. Hahn, Campbell and Associates, Burlingame, Calif. Graphs. Maps. Tables. Mimeo. 36 pp.

SPOKANE, WASH.—Annual Report of the City Auditor 1949. Supplement to *Official Gazette* April 19, 1950. Tables. 80 pp.

STAMFORD, CONN.—Report of the Citizens' Committee to Study the City Government. Published by the Stamford Good Government Association, Stamford. Jan. 1950. Tables. Graphs. 129 pp. $1.

UNITED STATES—The American Family. A Factual Background. Report of Inter-Agency Committee on Background Materials. National Conference on Family Life, May 1948. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Mimeo. Tables. 457 pp. $1.25.

——Current Research Projects In Public Administration, 1950. Reported to Public Administration Service, 1313 East 60th St., Chicago 37, Ill. Mimeo. 51 pp. $1.

——Manual of Highway Construction, Practices and Methods. American Association of State Highway Officials, 1220 National Press Building, Washington 4, D. C. Tables. 181 pp.

——National Airport Plan 1950. General Information and Data by States. U. S. Department of Commerce, Civil Aeronautics Administration. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Tables. Graphs. 177 pp. 75 cents.

——Tentative Standard Specifications for Installation of Cast Iron Water Mains. Bulletin 7D.1—T., and Tentative Standard Specifications for Reinforced Concrete Water Pipe-Steel Cylinder Type, Prestressed. Bulletin 7B.2—T. American Water Works Association, Inc. 500 Fifth Ave., New York 18. 35 cents and 20 cents respectively.

WASHINGTON—The Library and the Public. Bureau of Governmental Research and Services, University of Washington, Seattle. Report No. 110. Feb. 1950. Mimeo 11 pp.

——Statement of Taxes Due in 1950. Prepared by Division of Municipal Corporations, Olympia, Wash. Tables. 15 pp.

WYANDOTTE, MICH.—Annual Report 1949. Department of Municipal Service. Tables. 35 pp.

### Correction

In listing the following report in the May issue of THE AMERICAN CITY, the price and series number were inadvertently omitted. The correct information is as follows: *Status of the Property Tax 1945 and 1949 in 43 Cities and Towns Within the Boston Metropolitan Area.* No. 19. Bureau for Research in Municipal Government. Jan. 1950. Harvard Graduate School of Public Administration, Cambridge, Mass. $2.


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# News and Illustrations

**Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings**

## Enterprise Diesel Holds Sales Meeting, Elects Vice-President

Members of the nationwide district offices of the Enterprise Engine and Foundry Co., 18th and Florida Sts., San Francisco 10, Calif., who convened recently for a 3-day meeting are:

*Lower Row, Left to Right:* G. C. Rasey, sales manager, engine div.; J. E. Watson, general sales manager; G. B. Wright, district manager, Chicago; P. K. Wabnig, district manager, New Orleans; P. I. Birchard, vice-president and general manager; W. E. Butts, president; J. W. Coombs, member of the Board of Directors; W. H. Porter, district manager, Seattle; J. H. Sheusner, chief engineer; H. T. Anderson, district manager, New York; H. L. Hansen, chief service engineer.

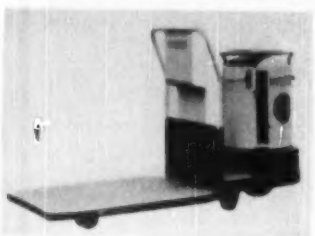
*Upper Row, Left to Right:* T. S. Pennebaker, district manager, Fort Worth; H. F. Neuman, stationary sales; M. T. Prendergast, manager service parts; P. R. DeVos, sales engineer; S. F. Atsatt, project engineer; E. G. Harris, district manager, Los Angeles; T. S. White, technical assistant; K. F. Cramer, district manager, Kansas City; L. J. Robbins, district manager, St. Louis; W. E. Bishop, district manager, Washington, D. C.; J. N. Brophy, district manager, Boston; H. J. Dauphinee, export sales; G. J. Brusher, marine sales.

**P. I. Birchard**

Enterprise recently appointed Paul I. Birchard as vice-president and general manager of the company. Associated with the diesel engine industry for over 20 years, Mr. Birchard joined Enterprise in 1946 as assistant to the executive vice-president. He became head of production at Enterprise's So. San Francisco plant and later general works manager. Since January 1948 he has been vice-president in charge of engineering and manufacturing.

## Hyster Acquires The Turret Trucks

The Hyster Co., Portland, Ore., has taken over the manufacture and sale of Turret trucks, formerly produced by the Salsbury Corp., Los Angeles, Calif.



**The Hyster Salsbury Cargo truck.**

The new line, which consists of the Pallet truck, Tug, Platform truck, Cargo truck, and Auto-Loader, will be known as the Hyster Salsbury Turret trucks.

Rounding out Hyster's previous line consisting of four-fork lift trucks ranging in capacity from 2,000 to 15,000 pounds, a 10,000-pound mobile crane, and two Straddle trucks of 18,000- and 30,000-pound capacity, the Turret trucks are designed for horizontal movement of materials rather than for stacking.

Each machine is gasoline-powered by a 6-hp Wisconsin air-cooled engine that is contained in a turret which for steering rotates completely around to reverse the direction of travel. The operator may either ride on the truck or walk alongside at speeds varying from less than 1 mph to 8 mph loaded or 12 mph empty.

The Pallet truck, with two forks which can be lowered to 3 inches above the ground and raised to 7½ inches by means of a hydraulic pump, handles materials loaded on pallets or supporting platforms. The Tug is designed for pulling trailer trains, and handles up to 15,000 pounds of tow. The Platform truck handles skids and tote boxes and also lowers and raises by means of a hydraulic pump. The Cargo truck has a platform height of 71/8 inches to permit manual loading in the movement of bulk cargo. The Auto-Loader, designed for loading and unloading automobiles in and out of freight cars, is similar to the Tug model plus an auxiliary hydraulic jack that is operated from a foot-pedal pump on the driver's platform.

## Two New Executives For Fairbanks-Morse

O. O. Lewis has been appointed vice-president in charge of sales, and F. J. Heaslip, vice-president in charge of purchases and traffic of Fairbanks-Morse & Co., 600 South Michigan Ave., Chicago 5, Ill.

**O. O. Lewis** **F. J. Heaslip**

Mr. Lewis joined the company in 1908 as a clerk. By 1932 he was manager of the company's Atlanta branch. In 1943 he was appointed assistant sales manager. Five years later he was moved from the assistantship to sales manager.

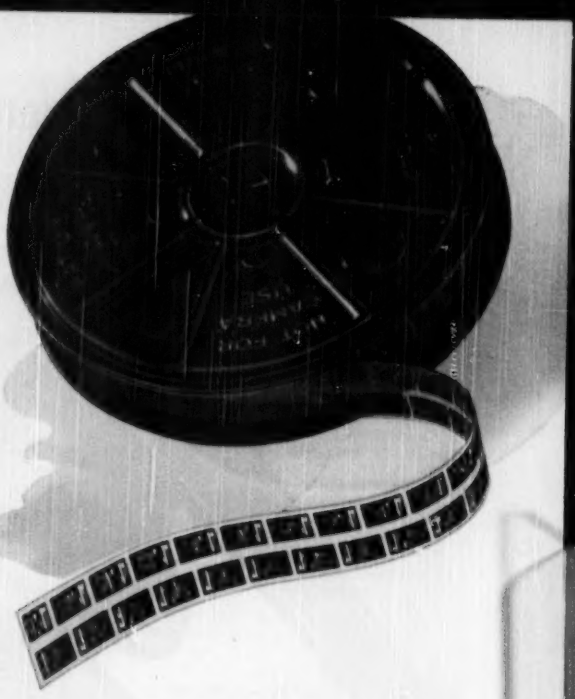
Mr. Heaslip has been with the company since 1927, starting as a buyer in the purchasing department. He was made purchasing agent in 1935 and director of purchases seven years after that.

## Nichols Named Board Member For Allied Chemical and Dye

C. W. Nichols, Chairman of the Board of the Nichols Engineering and Research Corp., 70 Pine St., New York 5, N. Y., has been made a member of the Board of Directors of the Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

A leader in the chemical and metallurgical fields, Mr. Nichols is widely known also as the inventor of the Nichols Monohearth incinerator for the disposal of garbage and refuse. The successful operation of Mr. Nichols' new incinerator was responsible for a wholesale review of incinerator design by engineers throughout the country.

# When you put your documents on Recordak microfilm



## ...you save up to 99% in filing space

A roll of Recordak microfilm is no larger than the palm of your hand, yet it holds thousands of documents . . . can be filed at your finger tips . . . in as little as 1% of the space required for the bulky paper originals.

## ...you speed reference

Everything's there . . . in "bound volume" sequence when you view your Recordak microfilm records enlarged sharp and clear in the Recordak Film Reader. And you can speed the film from image to image at will . . . get all the information you seek . . . quickly.

## ...you get greater protection

Your records are photographically accurate and complete . . . are on rolls of Recordak microfilm which can't be altered without detection. Furthermore, these records will not flake or yellow and are long lasting. And they're so compact you can vault-store them, if you wish.

**With a Recordak Microfilmer** you can put your documents on film—simply . . . instantaneously . . . at a cost of only a fraction of a cent apiece.

There's a complete line of Recordak microfilming equipment . . . designed to give you maximum operating efficiency and economy regardless of your requirements. *So get all the facts soon!*

Write to Recordak Corporation (*Subsidiary of Eastman Kodak Company*), 350 Madison Avenue, New York 17, N. Y.

RECORDAK

*(Subsidiary of Eastman Kodak Company)*

**originator of modern microfilming—and its application to government routines**

*"Recordak" is a trade-mark*

# Smooth Your Fleet Operations with

# Genuine FORD Shock Absorbers

*1.* Rotary vane type Genuine Ford Shock Absorber. Adjustable.

*2.* Direct acting, aircraft-type hydraulic Genuine Ford Shock Absorber unit.

FoMoCo
Ford Motor Company
GENUINE PARTS

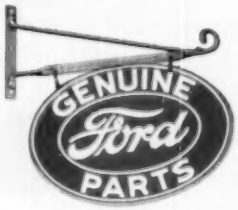
**1.** Rotary vane type Genuine Ford Shock Absorber fits Ford Cars from 1928-48, features special "Ride Control" that permits quick manual adjustment. Synthetic thread seal and floating packing prevent leaks.

**2.** Direct acting, aircraft-type hydraulic Genuine Ford Shock Absorbers are used on 1949 and '50 Ford Cars. Provide damping effect on spring action, both compression and rebound. Made throughout to Ford famed hi-precision standards.

## Brand New...Not Rebuilt

**2000 bumps a mile make shock absorbers a big service item for any fleet operator. When the time comes to replace the "shocks" on your Ford Cars and Trucks, be sure they are Genuine Ford Shock Absorbers. Naturally they are *right* for Fords—made right to fit right and last longer. You'll save money and "down-time," when you use Genuine Ford Shock Absorbers.**

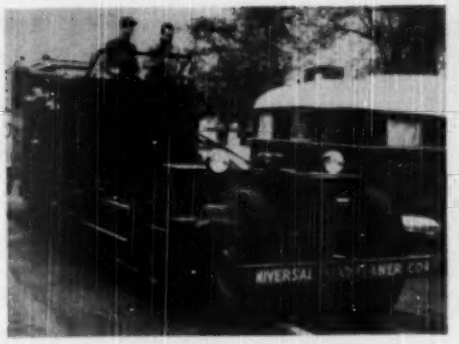
**See your nearest Ford Dealer. He can fill your every parts and service need—promptly, accurately and at prices you will find most reasonable.**



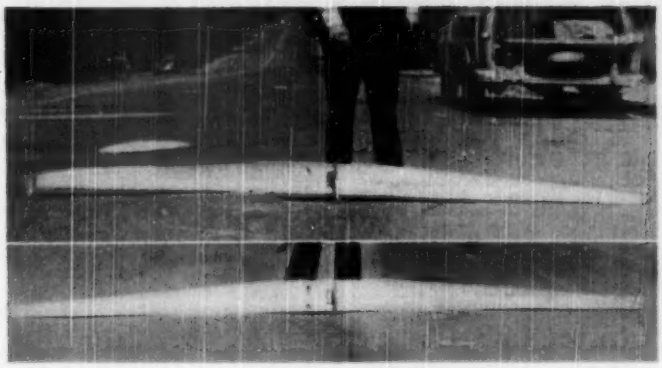

Genuine FORD Parts...
**Right for FORDS!**

**FORD Division of FORD MOTOR COMPANY**

## How to Use the Heater-Planer in Street Improvements



The heater-planer at work ▶



**A before-and-after shot of the same street. Notice comparative surface contours.**

The heater-planer made by the Universal Road Planer Corp., 83 So. High St., Columbus 15, Ohio, is designed to heat and cut to a uniform plane all rough and uneven bituminous wearing surfaces. Accomplished by heating and planing in one operation and windrowing the planed-off material for easy removal, the process is especially adaptable for the following surface problems:

*Where roughness or slipperiness is the problem:* In most instances planing alone will suffice since it extends the life usefulness of the old bituminous wearing surfaces. It is important that the pavement contain sufficient bitumen to seal under traffic. When sufficient bitumen is present in the wearing surface, the old material can be re-used either for patching purposes or for resurfacing the streets.

*Where resurfacing is contemplated:* It is advisable to plane the old surface to a uniform smoothness in order to insure uniform compaction of the new wearing surface. Planing is advised in lieu of a leveling course of new material to prevent the tendency to shove or become displaced during hot weather under heavy traffic—a frequent result of uneven thickness of material.

*Where surface treatment is required:* Perennial surface treatments without proper preparation of the old wearing surface is unsatisfactory because the surface treatment will not knit properly as the result of ingrained oil, grease, and other drippings in the old surface.

*Where widening is undertaken:* It is important to procure a uniform contour of the widening strip and the old pavement to avoid unevenness and irregularities.

A final point is the importance of maintaining gutter depths. Without planing previous to resurfacing, the gutter depth may be diminished to a degree that can become a definite traffic and drainage peril.

## Gillespie Heads Chain Saw Sales

William P. Gillespie, manager of the market requirements department of Henry Disston & Sons, Inc., 665 Tacony, Philadelphia 35, Pa., has been named manager of chain-saw sales. He succeeds Ellwood J. Gebhart, who has been assigned to a research and development post at the factory.

**W. P. Gillespie**

With the company since 1936, Mr. Gillespie set a company record by selling on all but 11 of some 1,500 dealer calls. He broke the record the next year by missing on only seven.

One Man Gang
GOLDAK
MODEL 87
Featherweight
PIPE LOCATOR
Only the Goldak Model 87 offers these BIG features:
PENTODE TUBES: These tubes have biased voltage which makes possible sharply defined separation of closely spaced pipes.
MICROTUNING: The metal handle is quickly and rigidly locked for perfect electronic balancing.
APPROVED LICENSE: The Goldak Company manufacturers the only Pipe Locator licensed by Western Electric, added assurance of better performance.
Write for FREE literature.
• EXACT location of buried pipes, mains, gates, tees, etc. • Total weight, 11 lbs. — one man operation! • Strong, positive location signal. • Standard miniature radio tubes and flashlight batteries. • Lasts a lifetime — guaranteed performance.
Don't Guess-KNOW!
GOLDAK L46
Leak Detector
Immediate detection of costly leaks in water and low viscosity fuel lines. Completely portable, one man operation!
The GOLDAK Company
Leading Makers of PIPE LOCATORS
1544 W. GLENOAKS BLVD., GLENDALE 1, CALIF.

# UNSNARLS TRAFFIC by Eliminating Free-Time Shoppers

**Police Chief John J. Pomfret of Middletown, Conn. Installs . . .**

***RHODES HURRICANE PARKING METERS FACING AWAY FROM MOTORISTS***

## RELIEVES CONGESTION—REDUCES ACCIDENTS

Time shoppers create hazards.* They cruise along looking for parking meters with unexpired time . . . slowing down . . . picking up speed again . . . suddenly stopping. Middletown, Connecticut, has licked this problem by installing single visibility RHODES Hurricane Parking Meters with the dial facing the sidewalk —*away* from the motorist. This installation was completed more than a year ago and, according to Chief Pomfret, has been effective in preventing congestion and keeping traffic moving freely. Because a driver can see *only* the back of the meter as he drives up, *all* parking spaces are alike. Once he's out on the sidewalk where he can see the face of the meter, he *stays*—free time or no free time.

***Slowing down or stopping responsible for 24.8% of parking accidents—Eno Foundation, Yale University.**

## Easy to Check

Middletown authorities wanted their meter installation to be easy for the policeman to check as he walked his beat.* Chief Pomfret reports that his method of installation has been a great help to the foot patrolman. The large red dial of the Hurricane Parking Meter makes it easy for the patrolman to spot violations at a glance from any angle and from long distances.

** The trend is away from mounted meter patrol.*

## Greater Convenience for Shoppers

Motorists like the idea of the parking meters facing the shops. They can see the "working side" of the meter without coming out to check up on the time left. Just a glance out the shop window at that large Hurricane dial and they know when they're approaching the "ticket" danger zone. Chief Pomfret says: "Everybody likes this system."

## Other Advantages

By eliminating cruising motorists seeking free time, the Middletown method of installation provides another incidental advantage to municipalities — that of increased meter revenue.

### STUDY SHOWS NEED OF RETURN TO ONE-COIN METERS

A recent study of metered parking by the Chicago Motor Club reveals that meters are defeating their purpose. This study reveals instances where meters installed *decreased* the number of cars parked. They say the car rather than the meter must be checked to eliminate the "parking hog"—the fellow who returns repeatedly to insert more coins. Multiple coin meters are harder to enforce than single coin meters. They encourage the parker to return because the patrolman cannot determine whether the parker returned on "second thought" to use up the balance of the time coming to him, or whether he is abusing the privilege. Alert municipalities are converting to single-coin meters* with a strong ordinance prohibiting the insertion of more than *one coin*. Finally, if it gets back to marking tires the use for meters is eliminated according to the law.

**According to Vehicular, Ltd., single nickel meters return $13.86 more revenue per year per meter than penny-nickel combinations.*

## Less Upkeep

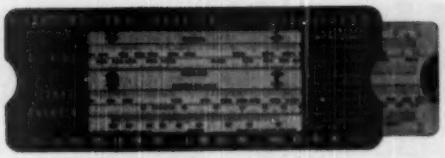
The rugged, simplified construction of the RHODES Hurricane Parking Meter means less servicing is required. Greater structural strength is provided because there's only a single dial . . . and because there is only one dial, the chance of damage due to vandalism is cut more than half.

***For further details about RHODES Hurricane Parking Meters, just write to . . .***

MARK-TIME

**M. H. RHODES, INC.** 36 Bartholomew Ave. Hartford 5, Connecticut

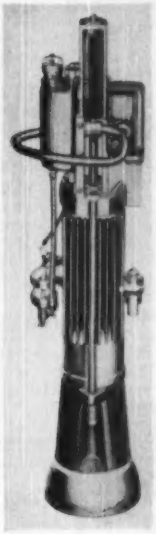
## Rule Shows Storage Capacity



The Hammond Iron Works, Warren, Pa., has developed a slide rule type of calculator to determine the storage capacity in gallons, barrels and cubic feet in tanks from 10 to 100 feet in height and from 20 to 200 feet in diameter.

The rule also indicates weights of steel plate, fractions and decimal equivalents from ⅛ to 11⅞ inches, and equivalent measurements of gallons, cubic feet, and barrels with their weights in water.

## Compactor for Hard-to-Reach Spots



For compaction on the restricted areas adjacent to foundations, pipes, and retaining walls, a new earth-fill tamper is offered by the Barco Mfg. Co., Chicago 40, Ill. Named the Barco Pegson Rammer, it is self-contained and portable, and insures specified compaction on lifts of 12 to 20 inches on sand or granular soils at the rate of 10 to 24 cubic yards of soil per hour. The machine operates over two hours on a tankful of fuel which is composed of a mixture of ½ pint of SAE 30 or SAE 40 in oil to 1 gallon of gasoline.

## Upham Establishes Consulting Service

Charles M. Upham, formerly Engineer-Director of the American Road Builders' Association, has opened an office for engineering practice. Temporary offices will be Suite 102, Willard Hotel, Washington, D. C. After November 1, he will move to a permanent office at Suite 606 Cafritz Building, 1625 Eye St. NW., Washington 6, D. C. Mr. Upham will offer services for reports, research, economic studies, appraisals, investigations, plans, surveys, finance consultation and representation to business clients, liaisons with government departments, international representation, and information service.

Mr. Upham has had a distinguished career in the roadbuilding field. He has piloted the affairs of the American Road Builders' Association for 24 years. He has served as consulting engineer for the Republic of Mexico, National Highway Commission; and for several Central American countries. He has served in a consulting capacity also for the Maryland State Road Commission, and the Pennsylvania Turnpike Commission. He held the position of U. S. delegate to the English International Road Congress at the Hague and was consultant to the U. S. delegation to the Third Pan American Highway Congress in Mexico. At present he is a member of the Executive Committee, Highway Research Board, and a member of the Board of Directors of the American Road Builders' Association.

**New M-B "Super 4" Marker Speeds Up Street Striping**

Here's a faster, more accurate center-line Marker available at low cost. Self-propelled — operator rides along on trailer, at speeds up to 5 miles per hour. Marker lays down clearly defined, single or double lines, straight or curved, any color. Variable speed drive permits selection of speeds for each type of material. Simple to operate. No skilled help required. Handy finger tip controls. Economical. No "mist" assures less paint gallonage per mile. Quickly convertible to all-purpose paint sprayer. Single or double line reflective bead dispenser available as optional equipment. Write for Bulletin No. 149.

*Investigate the M-B Line of Power Graders and Maintainers . . . Front End Loaders . . . Power Sweepers . . . Industrial Street and Highway Markers . . . Tilt-Bed Trailers . . . Winches . . . Conveyors. Write for literature.*

**MEILI-BLUMBERG CORPORATION**

Box 110, New Holstein, Wisconsin, U. S. A.

The M-B insignia is your assurance of high quality.

Backed by a quarter century of specialized experience.

ROAD EQUIPMENT

A 5759-½I-C

West 43rd Street, built in 1924. Upper photo taken in 1927, lower photo in 1949

Spencer Avenue, built in 1922. Upper photo taken in 1923, lower photo in 1949

# Here today – *and still here tomorrow*

## that's the story of Indiana's *CONCRETE* streets

DURING THE 1920's Indianapolis paved the four concrete streets illustrated here. Having given a generation of dependable, ***low-annual-cost*** service, they are still in excellent condition today and good for many more years.

Outstanding service records like these are typical of concrete streets all over the country. With concrete it's a case of "here today—*and still here tomorrow*."

Correctly designed concrete pavement has the strength and stamina to render long years of uninterrupted, all-weather service. It stands up under the continuous impact of traffic regardless of blistering summer sun and heaving winter frosts. Today air-entrained concrete provides even greater built-in durability by eliminating scaling.

Concrete also is the safety pavement. In wet or dry weather concrete's gritty texture affords uniformly high skid resistance. At night concrete's light color reflects more light than other pavements, thus improving visibility and reducing accidents.

Concrete pavement is economical too. For all but lighter traffic it usually costs less to build than other pavements of equal load-carrying capacity. It costs far less to maintain and it lasts much longer. All that adds up to ***low annual cost,*** the true measure of pavement economy. And concrete's high light reflectance cuts street lighting costs as much as 50%.

For more information about durable, ***low-annual-cost*** concrete pavement write for a free copy of *"Concrete Pavement Design."* Distributed only in the U. S. and Canada.

Arlington Avenue, built in 1929. Upper photo taken in 1929, lower photo in 1949

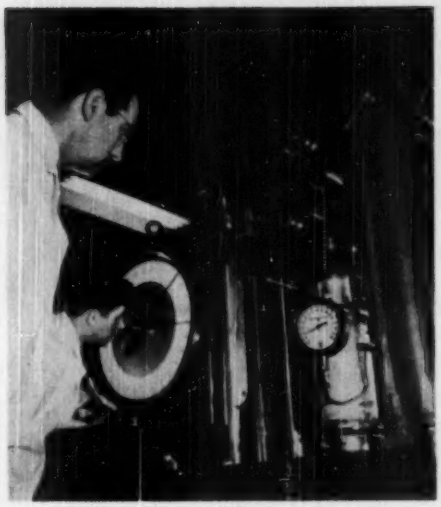
Winthrop Avenue, built in 1929. Upper photo taken in 1929, lower photo in 1949

**PORTLAND CEMENT ASSOCIATION**

DEPT. 6-4, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

## Tailor-Made Main Streets



**In the Triaxial test, a measurement of stability, pressure running as high as 30 tons is applied to the ends of the cylindrical core. To simulate the lateral support given by the large mass of asphalt in an actual pavement, the Triaxial test equipment includes a water-filled jacket which supports the sides of the sample as pressure is increased on the ends.**

Microscopes, diamond-fitted cutting tools, and X-ray diffraction machines are being focused on bringing to the fore knowledge of the properties and performance characteristics of asphalt, stone, sand, and filler in order to solve problems in actual road-building jobs.

The Shell Oil Company's Wood River, Illinois, Asphalt Laboratory begins by studying individual paving components, testing asphalts of various types, checking chemical composition and physical properties that affect the asphalt under a wide range of climatic and load-bearing conditions. The staff measures the porosity and hardness of various types of stone, determining which types are best and which are suitable for different road - building jobs; similar studies help to evaluate sands and fillers.

Then carefully selected stone, sand, and filler are weighed out in precise quantities; asphalt made to rigid specifications is added; the batch is mixed under controlled temperature and for a definite time. The result? A scientifically prepared paving mix the stability and practicability of which can be tested for actual application.

Shell opened the laboratory before the war, and has continued since then in its research program to help paving engineers toward the goal of tailoring every street and highway specifically for every condition of climate and use.

## Personnel Changes

As of July 1, 1950, the following personnel changes will be in effect in the United State Pipe and Foundry Co., which is located in Burlington, N. J.

Carl N. Brown, at present Western sales manager at Chicago, will become assistant general sales manager with headquarters at Burlington, N. J.

Howard A. Hoffer, assistant general sales manager, will continue in that capacity with headquarters at Burlington, N. J., and will be in charge of all export sales and Eastern division sales.

J. Leslie Hart, assistant Western sales manager at Chicago, Ill., will take over the position of Western sales manager with Chicago headquarters.

Harry D. Wade, Kansas City sales agent, becomes Western sales manager, with headquarters in Chicago.

Thomas B. Irwin, now with the Philadelphia sales office, will be the new Kansas City sales agent.

## Heads Josam Advertising

**S. R. Selman**

Sadye R. Selman has been elected vice-president in charge of advertising for the Josam Mfg. Co., 1302 Ontario St., Cleveland, Ohio.

Starting as a stenographer with Josam, Miss Selman was later promoted to the positions of office manager, and — a year ago — to advertising manager.

## Riddell's Distributor

The W. A. Riddell Corp., Bucyrus, Ohio, has appointed the Files and O'Keefe Co., Portland, Maine, as distributor in that state for Warco motor graders and Hercules road rollers.


# ALABAMA PIPE COMPANY

***General Sales Offices***

## ANNISTON, ALABAMA

*TAKES* **pride in announcing the resumption of pressure pipe manufacture at its recently completed modern plant located at Anniston, Alabama. This plant will produce Super deLavaud cast iron pipe, centrifugally, in modern long lengths.**

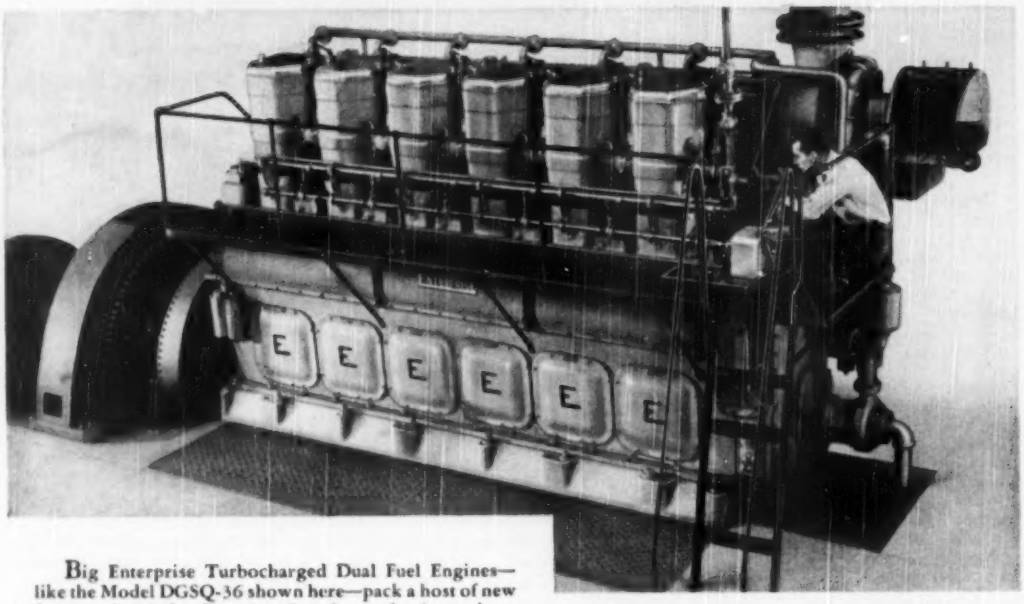
***Inquiries addressed to our nearest sales office will be appreciated.***

**122 So. Michigan Avenue**
**Chicago 3, Ill.**

**3122 Coleman Road**
**Kansas City 2, Mo.**

**350 Fifth Avenue**
**New York 1, N. Y.**

# THERE'S NEW ECONOMY IN ENTERPRISE TURBOCHARGED *DUAL FUEL ENGINES*



Big Enterprise Turbocharged Dual Fuel Engines—like the Model DGSQ-36 shown here—pack a host of new features that make them your best buy today in modern, high-economy power.

Here is the engine that actually cuts operating costs as much as 50%. For in addition to the economies inherent in Enterprise straight diesel operation, this flexible engine efficiently handles a variety of gas fuels, including natural gas, butane or butane-propane mixtures, manufactured or sewage gas—whichever is available at lowest cost per BTU. The new Enterprise gas-fuel system is quickly set or changed to any mixture desired—without stopping the engine or changing parts—from full diesel operation to 95% gas, 5% pilot oil. No dangerous overloads are possible. And Enterprise Turbocharging further reduces initial engine costs per HP, plus gaining important savings in fuel.

When you compare—feature for feature—*your* choice will be Enterprise . . . the choice of power experts.

Write for New Bulletin

*Bulletin No. DF-200 describes in detail the outstanding features of Enterprise Dual Fuel Engines, normally aspirated and turbocharged. Write for your copy today!*

ENTERPRISE ENGINES

**ENTERPRISE ENGINE & FOUNDRY COMPANY**

18th & Florida Streets • San Francisco 10, Calif.

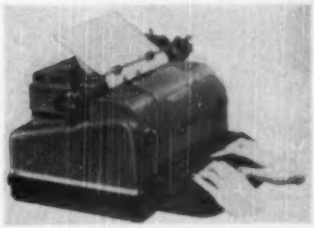
OFFICES IN PRINCIPAL CITIES

## Appointment for Cartwright

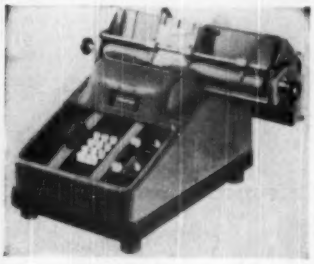
Ray Cartwright, formerly manager of the St. Louis, Mo., district office of the Standard Steel Works, North Kansas City, Mo., has been named manager of the company's road equipment division. He will supervise sales throughout the country of asphalt distributors, street flushers, supply tanks, tar-kettles, construction brooms, gravel spreaders, asphalt tools, and tool heaters.

R. Cartwright

## Electric Typewriter And Calculator



**The 1950 electric typewriter made by the Underwood Corp., One Park Ave., New York 16, N. Y., is available at Underwood offices and sales agencies throughout the country . . .**

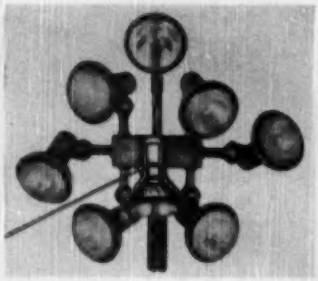


**. . . as is the Underwood Sundstrand adding tabulator, which is equipped with direct subtraction and credit balance.**

## For Outdoor Lighting

Magni-Lite, Inc., 60 E. 42nd St., New York 17, N. Y., has put out a line of all-weather, low-cost floodlights and spotlights that give sealed beam lighting and eliminate halo. Made of cast-silicon aluminum, the air-cooled lamp holders have a weatherproofing arrangement that seals the lamp on the metal neck to provide a positive seal on all standard lamps regardless of slight variations in lamp dimensions. Standard base 75- and 150-watt PARS lamps as well as the 200- and 300-watt R-40 lamps may be used, and production has just started on a series designed for use with mogul base 300- and 500-watt R lamps.

With the holder completely covering the side of the lamp, protection against stones and vandalism is provided for the brittle parts of the lamp while offering a simple means of adding glare shields, color lenses, or wire guards. Precipitation around the lamp in front of the weatherproof seal and condensation from the socket or the wiring trough are drained off through spaced holes; all wiring is completely enclosed.



**A cut-away view showing how the weatherproof seal provides complete air cooling and weatherproofing.**

Over 25 years ago Solar brought into the sanitation field an entirely new technique for waste disposal and enclosure. It provided for a heavily constructed, all-steel receptacle equipped with an *exclusively designed swinging cover* that would open at the slightest touch. This technique has been a major factor in accomplishing the outstanding service that Solars have rendered to the municipalities of the nation.

***Only One Moving Part with One Single Bearing***

A simple principle of gravity and a single bearing do it all. A touch of the finger or hand and the cover swings open for waste disposal and then gently and quietly swings back to its normal closed position. There are *no springs or weights* to get out of order and defeat the purpose for which the receptacle was built.

*Safety, freedom from mechanical troubles, plus engineering and manufacturing excellence are the built-in qualities of every Solar you buy.*

Your streets, parks and playgrounds deserve the best. Buy Solars and you get the best.

**Write for complete information today. Address Dept. ACI.**

**SOLAR-STURGES** *Mfg. Division*
PRESSED STEEL CAR COMPANY, INC.
MELROSE PARK, ILLINOIS

when they're

# buried 100 years

they'll still be

# full of life!

Most widely-used and best-known type of cast iron pipe joint is the standard water bell—designed for caulked lead make-up.
Bell and Spigot Joint
A time-saving, easily installed mechanical cast iron pipe that reaches the job with all joint materials complete.
Clow Mechanical Joint
For exposed pipeline work. Flange dimensions and drilling conform to requirements of A.S.A. Class 125 for flanged fittings and valves.
Flanged Joint

# CLOW Cast Iron Pipe & Fittings

The proven ability of cast iron pipe to resist corrosion and give a century and more of service, is the best reason why you should specify it for your municipal water supply system: it passes the *real* test of economy—*long life*.

Cost-conscious city officials find it actually costs less to specify Clow Cast Iron Pipe and Fittings. They've discovered that once cast iron pipe is installed, there's practically no maintenance, repair or replacement required. They know it's the *best* pipe investment.

## Now available for immediate shipment

Clow Cast Iron Pipe is centrifugally cast—in sizes from 3 to 24", in 18' lengths, and for working water pressures to 250 pounds. Meets Federal Specifications WW-P-421 for Bell and Spigot Cast Iron Pipe for Water. Can be easily cut in the field if needed, and drilling and tapping it for services results in superior threads and perfect connections.

***Send today for our book, "Pipe Economy"***

## Standard Clow Cast Iron Pipe Fittings

All types of Clow Cast Iron Pipe Fittings are offered in straight and reducing sizes for use with Bell and Spigot Joint, Mechanical Joint and Flanged Joint cast iron pipe.

BELL & BELL ONE-EIGHTH BEND

MECHANICAL JOINT 90° ELBOW

90° STANDARD FLANGED ELBOW

## Special Fittings

Clow foundries are well equipped to produce your special fittings promptly and accurately, to meet particular requirements, and to solve unusual installation problems.

**JAMES B. CLOW & SONS**

**201-299 North Talman Avenue**

**Chicago 80, Illinois**

CAST IRON

**National Cast Iron Pipe Division, Birmingham, Ala.; subsidiaries Eddy Valve Company, Waterford, N.Y.; Iowa Valve Co., Oskaloosa, Iowa**

## Promotions at FWD

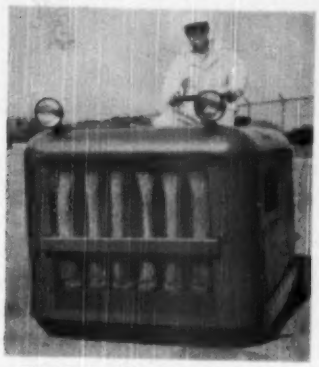
L. Pernot J. Thompson

The Four Wheel Drive Auto Co., Clintonville, Wis., has appointed Lloyd Pernot manager of national accounts, and John Thompson, formerly specialized markets manager, as director of the service division, Mr. Pernot's former position.

Mr. Pernot has been with the company since 1931; he was appointed service director twelve years ago.

A trained engineer. Mr. Thompson joined FWD in 1947 after twenty years of engineering and management experience with RCA and Western Electric.

## A Multiple-Service Sweeper



The Wayne Mfg. Co., 1201 E. Lexington Ave., Pomona, Calif., has designed an indoors and outdoors tri-wheeled sweeper that is all-enclosed, flush-bodied, motorized to steer like an automobile, and equipped with a vacuum dust control system that provides dustless sweeping.

With a 42-inch swath at 6 mph, the machine handles 100,000 square feet per hour — equal to about 20 men with push-brooms. Powered with a 7½-hp engine equipped with a self-starter, the machine draws dust into an easily emptied metal box rather than into dust bays. 90° turns facilitate operations in confined areas.

Adjustable tension on the pick-up broom enables the sweeping of uneven surfaces of any type, and the picking-up of such materials as chunks of metal, welding rod ends, wire, paper, cloth, string, wood blocks, rubber, dry cement, grease, oil and water.


# Just the Thing

*for*

**SMALL TOWNS AND VILLAGES**

***that cannot afford expensive maintenance equipment***

Revere ELECTRIC MFG. CO.

**HINGED STREET LIGHTING STANDARDS**

Luminaires can be kept at top efficiency at all times by simply lowering Standard as illustrated. No risky climbing.

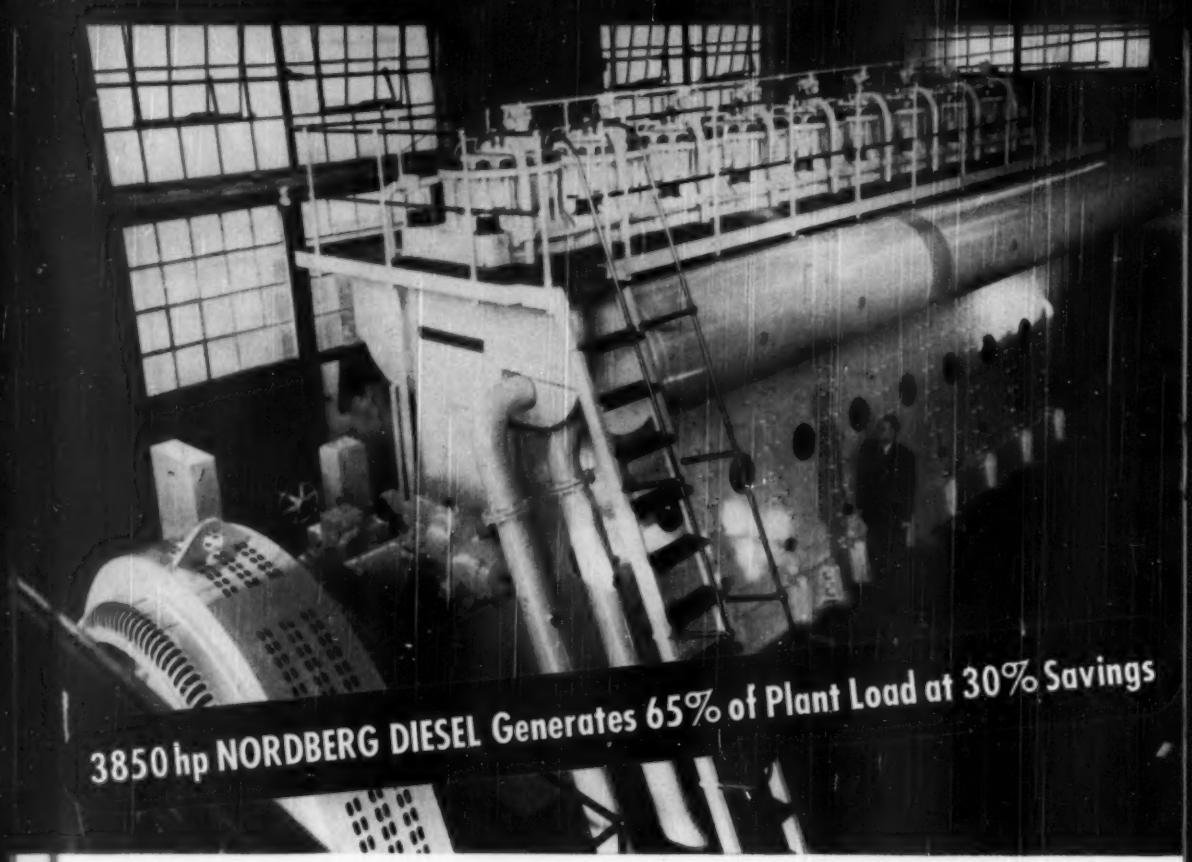
Standards available in 20, 24 and 30-foot heights; with and without transformer housings. Mast arms—4, 6 and 8 feet long.

Ingenious hinge construction does not twist or strain wires to cause shorts. No great exertion necessary in raising or lowering luminaire because upper section is proportioned to balance the weight of mast arm and luminaire. Pole is securely bolted and locked when in raised position.

***Write immediately for full information on REVERE Street Lighting Standards.***

REVERE ELECTRIC MFG. CO.

6015 BROADWAY — *Indoor and Outdoor Lighting Equipment for Every Requirement* — CHICAGO 40, ILL.



# 3850 hp NORDBERG DIESEL Generates 65% of Plant Load at 30% Savings

With the installation of this nine-cylinder 3850 hp Nordberg Diesel in the Village of Freeport, N.Y. light and power plant, and with a total capacity of 17,310 hp installed, this makes one of the largest municipally owned diesel-electric plants in the United States.

Usually the first few months of engine operation are used for break-in and adjustments, but in this case the new engine went right to work and established a number of plant performance records. In little more than five months, the diesel was in operation 3,386 hours, and made the longest continuous run of any engine in the plant.

Just before the Nordberg Diesel began its full-time operation, the plant's average cost per kwh, including fuel, lube oil, labor, maintenance, supplies, insurance, depreciation, and miscellaneous expenses, was 11.4 mills. The corresponding cost for the Nordberg unit is just 8 mills, a reduction of about 30%, and a figure set by Chief Engineer Thomas Moore as a goal for the entire plant.

During summer months, Freeport's load varies from a low of about 2,000 kw in the early morning hours to a peak of about 5,500 kw. Running alone, the big Nordberg handles the valley load nicely; when load rises, it continues to carry a relatively high percentage, which makes for operating convenience and efficiency. Mr. Moore estimates that this one engine is generating 65% of the plant's kwh production.

*Here, then, is another good example of the way in which Nordberg Diesels, in sizes from 10 to 8500 hp are being used to solve municipal and industrial power generation problems. Write for details, outlining your requirements.*

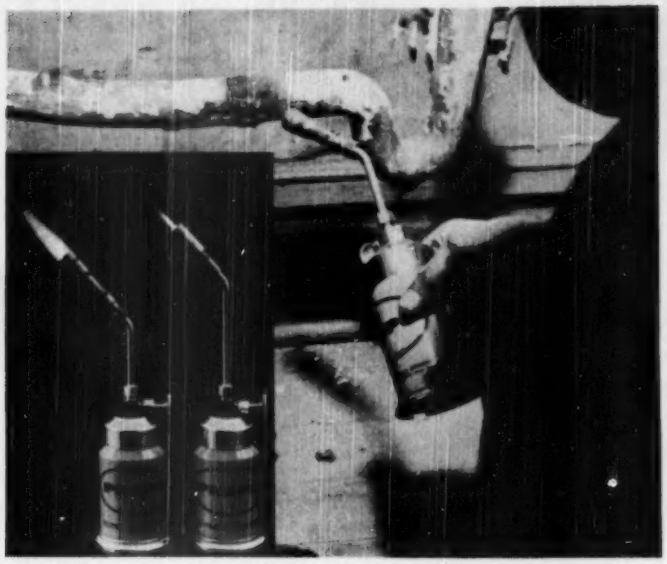
**NORDBERG MFG. CO., Milwaukee 7, Wisconsin**

P350

BUSCH SULZER
A DIVISION OF NORDBERG

NORDBERG
DIESEL ENGINES

## Fuel in Throwaway Can



A self-pressuring fuel for flame tools and small appliances useful in water, sewer, and street departments to supplement welding torch work has been packaged in a seamless throwaway container about the size of a beer can.

Called Prepo by its inventor, Louis A. Falligant, president of the Pressure Products Corp., 140 N. Dearborn St., Chicago 2, Ill., the fuel cannot be poured from the container. A rubber valve mounted on top of the container attaches to a mating fixture on the torch or other appliance. The container of fuel becomes the fuel tank of the appliance until empty, when it is removed and replaced by a new can of Prepo.

The company has also announced the first of a series of tools designed to be used with the fuel: a hand torch which lights instantly and burns with a flame of over 2,200°.

Among the tools and appliances soon to be placed on the market along with the hand torch are a no-stoop weed burner, a solder dip pot, a lantern that will produce a light equal to an 85-watt bulb, a soldering iron, and a refrigerant leak detector.

As both a gas and a liquid, Prepo fuel is odorless, non-toxic, non-poisonous. In preparing it for market, an artificial odor is added to prevent careless use of the appliances, such as opening the valves without lighting the flame.

## Smith Appointed by Joy Mfg.

The Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh 22, Pa., has appointed Darrell Smith as manager of distributor sales.

The company manufactures snow loaders, portable air compressors, paving breakers, and other equipment for the municipal field.


American Vacuum Leaf Loader

Solves your leaf or clean-up problem

Write for leaflet

LEAF LOADER DIVISION

American Structural Steel and Tank Co.

21050 W. 8 MILE ROAD DETROIT 19, MICH.



3 way dependability

1. **IN CASE OF FIRE**—dependable, smooth operation . . . clear, large waterways . . . insure plenty of water. Hydrants open fast and easily *with* the pressure . . . and close without water hammer.
2. **IN CASE OF ACCIDENT**—stem held in place below main valve means no water loss due to a bent stem. One man can easily remove all operating mechanism for inspection or repairs.
3. **IN CASE OF LOW TEMPERATURES**—Eddy's positive drip action automatically drains hydrant barrel of all water when hydrant is closed . . . safeguards hydrant against freeze-ups.

EDDY

VALVE COMPANY

WATERFORD NEW YORK

*A subsidiary of James B. Clow & Sons*

# REVOLUTIONARY NEW FIBRE FOR ROTARY POWER SWEEPERS

## ...makes all other fibre obsolete!

**PERMENE** *fibre developed by Modglin after 3 years research, outwears other fibre many times.*

Permene, the only fibre ever engineered specifically for rotary sweeper use, is the toughest, most durable, most efficient fibre in the world for its purpose.

**WEARS LONGER:** Street tests by numerous cities, including Los Angeles, New York, Chicago, Glendale, Inglewood, and many others, have shown without exception that Permene outwears any other fibre *many times over.*

**CUTS COSTS:** Because Modglin Permene wears longer, expensive, frequent re-winding of brooms is eliminated. One city, by switching to Permene, cut the number of re-winding operations per sweeper from an average of 54 times per year to 12. Permene saves labor, saves cost of materials, saves tie-up of equipment.

The new Modglin Permene Fibre now being tested by New York City Department of Sanitation.

**SWEEPS BETTER:** Permene wears slowly and evenly, retaining its "flicking action" always. Therefore uniform contact with surface swept is maintained; there is less strain on equipment; and better sweeping performance is obtained.

**MAKE YOUR OWN TEST:** Try Modglin Permene on your own equipment and then you be the judge. *Write us on your letterhead and we will make arrangements through your local distributor.* We want you to see for yourself how uneconomical it has become to sweep with any fibre but Permene! *Write us for particulars today.*

## *Perma*-push

The #1024 Perma-Push is the most efficient and long-wearing push broom ever built for street use. Its extremely durable Permene Fibre is resistant to common petroleum products, to cleaning solutions, and to water. Fibre never gets soggy, water-logged or matted . . . retains "flicking action" at all times. Works equally well on concrete, asphalt, brick, stone, and macadam. The #1024 Perma-Push lasts so much longer than any other push broom and saves so much time and labor through more efficient sweeping performance that it is a genuine economy. Write for detailed information today!

**MODGLIN COMPANY, Inc., 3235 San Fernando Road, Los Angeles 65, California**

**WORLD'S LARGEST MANUFACTURER OF BROOMS**

## Three Get New G. E. Posts

The General Electric Co., Schenectady 5, N. Y., has appointed P. A. McTerney as administrative assistant to J. M. Crawford, manager of the Large-Motor and Generator Divisions. S. V. Travis will assume Mr. McTerney's former position of manager of sales of these divisions, and his assistant manager will be L. H. Matthes.

P. A. McTerney

Mr. McTerney joined G. E. in 1918. In 1929, he was transferred to the motor division, and was responsible for the company's entrance into the gear-motor field. By 1945 he was division manager of the Synchronous, Large D-C, and Gear Motors Division.

Mr. Travis exceeds Mr. McTerney's service with G. E. by seven years. By 1935 he was manager of the Central Station Department in the Generator and Converter Division, holding that position when the division became part of the Large-Motor and Generator Divisions in 1947.

With the company a mere twenty-nine years, Mr. Matthes has progressed through the positions of test engineer, design engineer, sales engineer, district manager, and general sales manager of the company's Air Conditioning Department.


A WONDER-AID PRODUCT

Disposerator

Trade Mark Reg.

AMERICA'S FINEST

AUTOMATIC GARBAGE DISPOSER

**Proven** . . .

by years of trouble-free use in many leading RESTAURANT CHAINS

**Proven** . . .

by years of trouble-free use in thousands of HOME KITCHENS

WRITE TODAY

for full information and literature

**WONDER-AID, Inc.**

**732 NORTH LAKE ST.**

**BURBANK, CALIFORNIA**

...Good water

No question about it; the most popular beverage of all is good drinking water—water that tastes right, smells right and looks right.

And there's no reason for water not to be "right." Where Welsbach Ozonating equipment is used, consumers know the pleasure of drinking water free from disagreeable chlorinous odors, offensive "medicinal" tastes and objectionable color.

The biggest Ozone installation in the world (serving the Belmont filtration area in Philadelphia) proves that through Welsbach, cities can get the most efficient type of water treatment at a cost that's kind to the taxpayers.

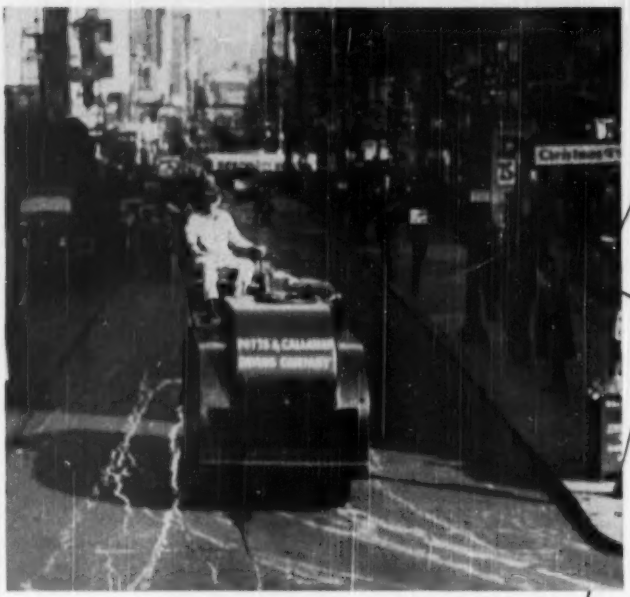
• • •

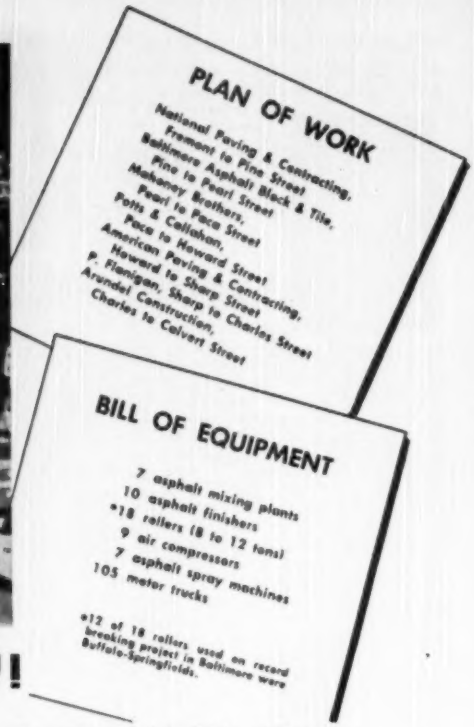
*Everybody wants improved drinking water—and all communities can now have it. Water technicians, city officials and consulting engineers particularly will be interested in the Welsbach-Ozone story. They are invited to write about their water difficulties to The Welsbach Corporation. A frank, factual analysis will be made—at no cost or obligation. Also ask for, "Are Bathless Thursdays Really Necessary?", the picture story booklet about the Welsbach-Ozone process and equipment.*

**THE WELSBACH CORPORATION**

**Ozone Processes Division**

1500 Walnut Street, Philadelphia 2, Pennsylvania




PLAN OF WORK
National Paving & Contracting,
Fremont to Pine Street
Baltimore Asphalt Block & Tile,
Pine to Pearl Street
Mahoney Brothers,
Pearl to Peca Street
Potts & Callahan,
Peca to Howard Street
American Paving & Contracting,
Howard to Sharp Street
P. Flanigan, Sharp to Charles Street
Arundel Construction,
Charles to Calvert Street
BILL OF EQUIPMENT
7 asphalt mixing plants
10 asphalt finishers
*18 rollers (8 to 12 tons)
9 air compressors
7 asphalt spray machines
105 motor trucks
*12 of 18 rollers used on record breaking project in Baltimore were Buffalo-Springfields.

# HOW TO PAVE A MILE A DAY!

Last summer the City of Baltimore, Maryland found it necessary to repave 14 blocks of busy Baltimore Street and awarded the contract to P. Flanigan & Sons Co., Inc. When the city fathers expressed concern over interruption to traffic while work was in progress on this vital city artery, there occurred an outstanding example of what can happen when civic minded contractors get together. The Flanigans conferred with six of Baltimore's leading contractors with the result that, on a single work-packed Sunday, all seven contractors combined to pave fourteen city blocks. Over a mile in length, the work took place between Fremont Avenue and Calvert Street. Twenty-five thousand square yards of asphaltic binder and topping were put down in sixteen hours of continuous operation. With the exception of the motor trucks needed to haul surfacing materials, more rollers were required than any other type of equipment on the job. Of the eighteen tandems employed, twelve were Buffalo-Springfields. This heavy Buffalo-Springfield preference is best expressed in the words of Mr. Pierce Flanigan:

"On a job like this, dependability is what counts and that's why we've used Buffalo-Springfield Rollers exclusively for the past forty-odd years. Our operators like them and we appreciate their low operating and maintenance costs."

Preference based on actual field experience is predominantly a Buffalo-Springfield success story—and one worth remembering when determining your roller needs for the work ahead. Your nearest distributor will be happy to tell you about the many exclusive features of the Buffalo-Springfield Heavy Duty Tandems—features that will help you in trimming costs and increasing production on all your jobs. Why not see him today?

*Mail This Coupon Today*

**THE BUFFALO-SPRINGFIELD ROLLER CO.**
**Dept. H-6, Springfield, Ohio**

☐ Please send me Catalog S-55-49 describing the right model for my requirements. ☐ Notify Distributor to call.

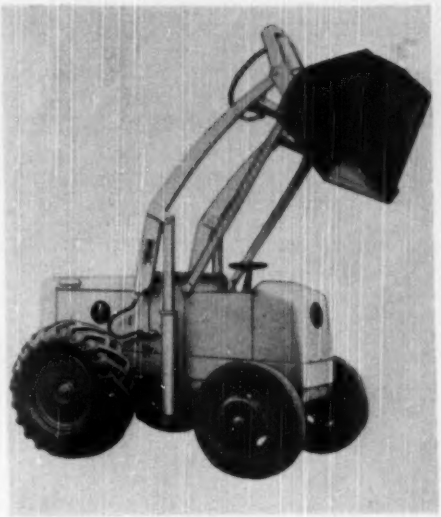
NAME .....

ADDRESS .....

CITY ..... STATE .....

BUFFALO SPRINGFIELD
THE STANDARD OF COMPARISON
SPRINGFIELD, OHIO

## Hough Restyles Payloader



The Frank G. Hough Co., 710 Sunnyside Ave., Libertyville, Ill., has in the re-styling of its Model HF ¾-yard Payloader tractor shovel, included the following improvements:

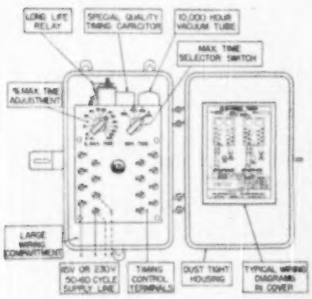
Greater engine horsepower.

Increased speed ranges, now extending to four forward speeds of 2.4 to 19.5 mph, and four reverse speeds, from 3.5 to 28.7 mph.

A new, heavy, cast radiator grill at the rear for protection.

Boom side-guards as standard equipment.

## New Electronic Timer


LONG LIFE RELAY
SPECIAL QUALITY TIMING CAPACITOR
10,000 HOUR VACUUM TUBE
MAX. TIME SELECTOR SWITCH
% MAX. TIME ADJUSTMENT
LARGE WIRING COMPARTMENT
115V. OR 230V. 50-60 CYCLE SUPPLY LINE
TIMING CONTROL TERMINALS
DUST TIGHT HOUSING
TYPICAL WIRING DIAGRAMS IN COVER

Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass., has developed an electronic timer for use on such automatic equipment as drilling machines, automatic filling machines, photographic printers, spot welders, and grinders.

Four basic types of timing are provided: interval, delayed action, automatic repeat, and programming. The basic circuit is designed so that it is self-compensating for changes in line voltages.

## American Coach & Body Announces Sales Changes

In charge of the new district sales office at Chicago, Ill., opened by the American Coach & Body Co., Cleveland 4, Ohio, is Ruben Bauer, and heading the new office at Tulsa, Okla., is Homer Feyen.

Other promotions announced are: Arthur Frank, who is now sales manager of the central division with headquarters in Cleveland; Robert Rector, sales manager, Southern division, headquarters in Atlanta, Ga.; T. A. Pelsue, sales manager, Western division, headquarters in Denver, Colo.; William Higgs, assistant sales manager, headquarters in Cleveland.


**—M-SCOPE—**
**PIPE LOCATOR**

**TYPE AB — 1950 MODEL**

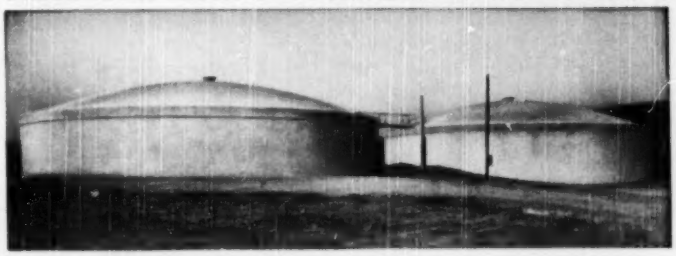
- Metal Cased Cabinets
- One Man Operation
- Unsurpassed Efficiency
- Fully Guaranteed
- Immediate Shipment

**PRICED ONLY $149.50**

*FREE LITERATURE*

**FISHER RESEARCH LAB., Inc.**
Palo Alto California





# PRE-STRESSED "GUNITE" TANKS

**Above are shown two 80' diameter 750,000 gallon prestressed "GUNITE" water storage tanks with "GUNITE" dome roofs. We built these tanks in 1943 for the Borough of Schuylkill Haven, Penna.**

**Prestressed "GUNITE" produces a water storage tank which is bottle tight and maintenance free. They may be built either at ground level, completely underground with earth covering over the dome roof, or may be in the form of stand-pipes or elevated tanks.**

**Our experience in this field includes scores of tanks and silos of many types ranging up to two and one-half million gallons capacity.**

***The use of "GUNITE" for repair and construction of reservoirs, bridges, buildings, etc., is illustrated and described in Bulletin D2400. We will gladly send a copy at your request. On your letterhead, please.***

**CEMENT GUN COMPANY**
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

# *It's Your Cost-Cutting Combination!*

Here's how to really step up the usefulness and profit-making ability of your Oliver Wheel Tractor-Loader. Simply add an Oliver Hydraulic Mower and you get a cost-cutting combination that will be busy virtually all year round. You can install the mower quickly and easily for those few days or weeks of work per mowing month . . . pull it off for the regular run of loading jobs. It's the ideal combination to cut your operating costs.

This powerful mower fits right into your tractor-loader. Cutter bar is driven by the hydraulic pump of the loader so no separate power units are required. Mower will cut anything from thick matted grass to moderate brush—in fact, almost anything that will pass between the knife guards. Hydraulic safety mechanism practically eliminates knife damage. Operator can cut right up to an obstruction . . . hydraulically raise the cutter bar to clear the obstruction...go right on mowing.

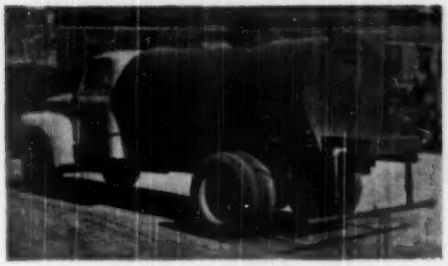
For all the facts on this cost-cutting combination that gives you year-round work with a tractor-loader-mower economically, see your Oliver Distributor or write us direct.

## THE OLIVER CORPORATION

**Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio**

***A complete line of Industrial Wheel and Crawler Tractors***

## Littleford Adds To Line



Littleford Bros., Inc., 500 E. Pearl St., Cincinnati 2, Ohio, is now producing water sprinkler tanks for soil stabilization, dust and weed control, and water hauling.

Made in both gravity and pressure models, the tanks may be obtained skid-mounted, truck-mounted, or 4-wheel trailer-mounted in any capacity from 800 to 1,500 gallons.

Large manholes make the tanks easy to fill. The spray bars, designed for removal without difficulty, can be supplied with shifting and end-folding features.

## Nickerson Elected Vice-Pres.

F. S. Nickerson has been elected a vice-president of the Mack-International Motor Truck Corp., Empire State Bldg., New York, N. Y. He will also handle the job of manager of the company's central division sales territory.

F. S. Nickerson

Active in the truck field since 1932, Mr. Nickerson joined Mack in 1945 as sales representative in its Atlantic division. The following year he was appointed manager of the company's Baltimore, Md., factory branch. Mr. Nickerson's headquarters will be in Mack's Chicago office.

## Worthington Changes

Walter H. Feldmann has been named vice-president in charge of sales for the Worthington Pump and Machinery Corp., Harrison, N. J., and John J. Summersby has been made vice-president in charge of purchases; Frederic W. Thomas, general manager of purchases; Carleton Reynell, general representative of the sales and purchasing departments.

Mr. Feldmann, who resigned as president of Worthington's subsidiary company, the Electric Machinery Mfg. Co. of Minneapolis, joined the subsidiary in 1922 and achieved the presidency six years ago.

Joining the Cincinnati works of Worthington in 1916, Mr. Summersby has held the positions of salesman, district sales manager, manager of the Holyoke works, assistant vice-president, and vice-president in charge of sales. Mr. Thomas joined Worthington in 1936 as assistant general manager of purchases after serving as general sales manager of mechanical power transmission equipment with the John Waldron Corp. Mr. Reynell has been with the company since 1930, starting as general purchasing agent and later becoming manager of the purchases and traffic department.

## Olson Elected President

Richard H. Olson has been elected president of the Electric Machinery Mfg. Co., Minneapolis, Minn. Mr. Olson was formerly vice-president in charge of sales.


**FAST-GROWING SOUTHWESTERN CITY BRINGS IN POWERFUL WATER PRODUCER**

**MUNICIPAL WATER SUPPLY SYSTEM WELL No. 12 DISCHARGES AT RATE OF 15,000,000 GALS. A DAY**

The 3,000-gpm pump with its 200-hp motor was installed in the well. With a free discharge from the twelve-inch open pipe and an eight-inch open nipple on the side of the discharge pipe, the maximum flow was estimated at about 10,000 gpm with a draw-down of only 1½ ft. It is estimated that this eighteen-inch well could furnish 15,000 gpm.

Reprinted from Water Works Engineering

**CUT YOUR OVERHEAD *underground* with Peerless Deep Well Turbine Pumps**

Follow the lead of progressive communities by installing modern, efficient Peerless deep well turbine pumps. Their superior design, high quality construction, high operating efficiency will cut your overhead underground. Make your standard of pump operation the Peerless standard. Write for Bulletin B-141-3 which describes Peerless vertical turbine deep well pumps in detail.

**PEERLESS PUMP DIVISION**
FOOD MACHINERY AND CHEMICAL CORPORATION
*Factories: Los Angeles, California, and Indianapolis, Indiana*
*Offices: New York; Atlanta; Fresno; Los Angeles; Chicago; St. Louis; Phoenix; Dallas, Plainview and Lubbock, Texas.*

# This town GOT the gravy!

A new plant . . . 350 new jobs!

An industrial company selected *this town* for its new plant over all other cities in the area. Why? It had the one manufacturing essential . . . soft water!

* * *

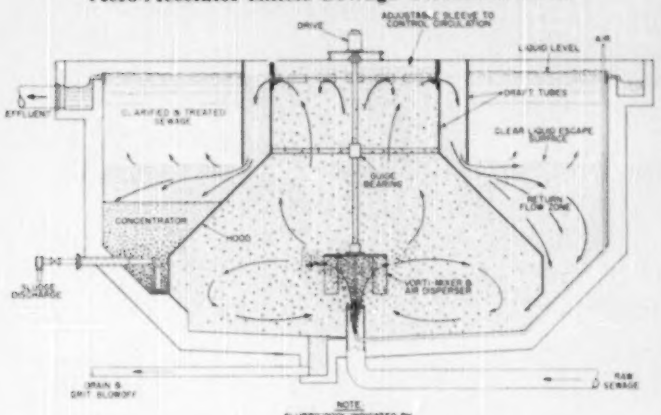
Soft water reduces manufacturing costs and increases quality in practically every industry. Those cities that have municipally softened water, have a big inducement for new industries to locate there. And soft water for every family in town is a *luxury* which more than pays for itself.

Why not consult with Permutit regarding your water supply? There's no obligation. Just write to The Permutit Company, Dept. AC6, 330 West 42nd St., New York 18, New York, or to Permutit Company of Canada Ltd., 6975 Jeanne Mance Street, Montreal.

**Permutit**

**WATER CONDITIONING HEADQUARTERS FOR 37 YEARS**

## Aero-Accelator Enters Sewage Treatment Field




**Infilco's new Aero-Accelator single-unit treatment plant. This is designed to provide treatment equivalent to that of activated sludge with a total plant detention period of between two to three hours.**

The Accelator unit that has been used so widely in water softening and clarification work has now been adapted for biological sewage treatment, according to Infilco, Inc., 325 W. 25th Pl., Chicago 16, Ill. Pilot-plant tests indicate that the unit should be able to treat raw screened sewage of the domestic type at a total retention of about two to three hours if the average BOD does not exceed 250 ppm, and provide a purification approximating that of activated sludge treatment.

The company explains that the treatment is of the activated sludge type since the raw incoming sewage is mixed with return sludge and air. However, in the Aero-Accelator the sewage is more quickly dispersed into the entire volume of activated sludge thus making all the biological organisms available to work at a rate of oxidation that more nearly equals the rate obtained when the organisms come in contact with the incoming sewage in a standard plant. Infilco engineers argue that there is no particular reason why the organisms must go through a cycle of being fed a large quantity of food and oxygen at one stage of the treatment process and then gradually allowed to become starved and depleted of oxygen towards the end of the cycle. The Aero-Accelator avoids this difficulty.

The Accelator already has been used in sewage treatment. Two 6-mgd units are in operation at Daytona Beach, Fla., where the treatment consists of mixing the raw sewage with water softening sludge that is available from the water treatment plant, maintaining a heavy slurry of this mixture in the sewage, and utilizing the Accelator principle to obtain clarification in a one-hour basin. The plant has been providing 99% removals of suspended solids and a BOD reduction of 60%. However this is a chemical rather than biological treatment.

In contrast the new unit relies on biological life for purification. It uses the Accelator principle of rapid and intense mixing of the incoming liquid with the previously formed solids and circulated so that the treated liquid is separated from the solids without allowing any of the solids to settle. A

*(Continued on page 197)*


**$5.22 a ton for Asphalt is worth saving!**

The Foote Kinetic Asphalt Mixer will give you 8 to 10 more batches from a barrel of asphalt. One user* has reported savings of $5.22 a ton. They used to buy their material for $10.50 a ton. Now they make it with the Foote Kinetic Asphalt Mixer for $5.28 a ton. $5.22 a ton is worth saving! Such savings will soon pay for your Foote Kinetic Mixer.

You cannot compare the Foote Mixer with an ordinary concrete mixer either from the standpoint of construction or of the finished product. Let us send you complete details. Ask for Bulletin K-100.

*Name on request.

- 3 cu. ft. in 30 seconds
- High output for low investment
- Handles any mix
- Fully portable
- New mixing principle gives you 8 to 10 more batches out of every barrel of asphalt

the FOOTE Kinetic mixer

THE FOOTE CO., INC.
Subsidiary of Blaw-Knox Co.
1958 State St., Nunda, New York

A BLAW-KNOX PRODUCT



*Long Life*

EMBOSSED TRAFFIC SIGNS

WRITE FOR CATALOG

*Cataphote Corporation*

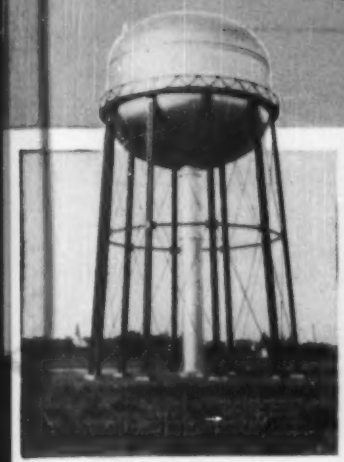
TOLEDO, OHIO

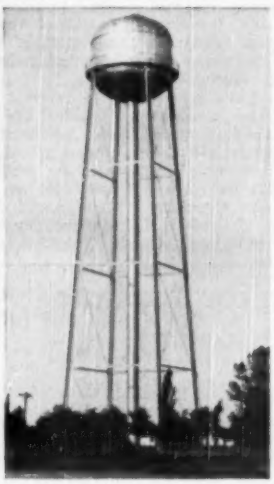
WHERE *Appearance* COMBINES WITH *Economy*

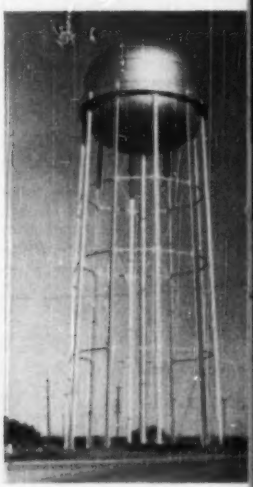
# PITTSBURGH • DES MOINES

## Double-Ellipsoidal *Elevated Steel Tanks*

Over a wide range of capacities up to a million gallons, the Pittsburgh-Des Moines Double-Ellipsoidal design offers low investment cost, excellent appearance and economical performance. It is one of the several P-DM Elevated Steel Tank types, meeting every water storage requirement.







***Write for*** your free copy of our latest 24-page brochure, detailing many important aspects of modern water storage.

**PITTSBURGH • DES MOINES STEEL CO.**

**Plants at PITTSBURGH, DES MOINES and SANTA CLARA**

*Sales Offices at:*

PITTSBURGH (25).....3412 Neville Island
NEW YORK (7)...Room 915, 270 Broadway
CHICAGO (3), 1216 First National Bank Bldg.
DES MOINES (8), 913 Tuttle Street
DALLAS (1), 1217 Praetorian Bldg.
SEATTLE.....920 Lane Street
SANTA CLARA, CAL.....619 Alviso Road

## Accelator Adapted For Sewage Field

(Continued from page 195)

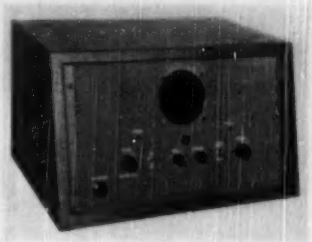
mechanical type of mixer is used and the shearing action of the revolving multi-bladed rotor is such that large bubbles of incoming air are dispersed into fine bubbles throughout the entire mass of the slurry. The bubbles then rise vertically and escape at the surface. The rising action of the air promotes a rotary circulation of the slurry, mixing it with the untreated sewage entering the aeration chamber.

The company has certain data obtained from pilot-plant test work that it offers to confirm the efficiency of the treatment. This will be available upon request to anyone requiring further confirmatory data.

## Remote Control RCA Consolette

A new remote control consolette for fire and police service is offered for use with RCA's Carfone and Fleetfone systems, and can be incorporated into all other mobile systems operating in the 30-50-mc or 152-174-mc frequency bands. The consolette consists of a limiting amplifier, power supply, audio amplifier, loudspeaker, and complete set of controls. Operating over a single pair of telephone wires, it controls a remote rack-mounted receiver and transmitter by a system of relays.

The new remote control consolette is one of five new control units now available through field representatives of the RCA Mobile Communications Equipment Section, or direct from the sales headquarters in Camden, N. J.



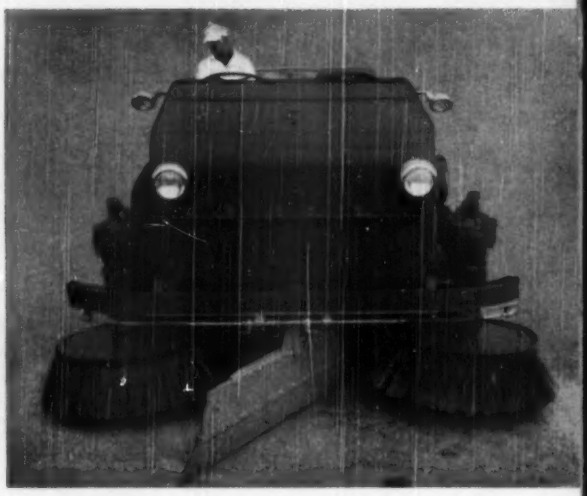
**This new RCA remote control consolette, Model CC-4C, for use with rack-mounted transmitter and receiver located at a remote position ten or more miles distant, is one of five new RCA control units for use with mobile fire and police radio communications equipment.**

You Take it Apart
See for YOURSELF the
Unusual SIMPLICITY
of Buffalo-made
American
Water Meters
AMERICAN (Bronze Case) WATER METERS
NIAGARA (Galv. Iron Case) WATER METERS
Only five submerged moving parts — only one moving part in the measuring chamber. No meter built in the United States today is as simple in design. The simplicity of American Meters means long service, low repair cost and smaller inventory of parts.
BUFFALO METER CO.
2902 MAIN STREET, BUFFALO 14, N. Y.

# WAYNE

**THE STREET SWEEPER FOR CENTRAL DUMPING**

# Loads Over 3 Cubic Yards



**MODEL 1-450**—Wayne Pick-Up Sweeper with single gutter broom. Used to sweep streets carrying two-way traffic.

**MODEL 2-450**—Wayne Pick-Up Sweeper with dual gutter brooms. Dual steering, dual seats, and dual controls permit driver to operate machine from either side and to be always on the curb side he is sweeping. Used to sweep one-way streets, divided highways, large paved areas and airports. Sweeping swath, 10 feet.

## . . . can cut your street cleaning costs in HALF!

The *new* WAYNE Model 450 Street Sweeper self-loads 84 cubic feet—*over 3 cubic yards*—of dirt and debris. That's considerably more than any other present sweeper self-loads.

And the *new* WAYNE gives you these additional advantages: (1) Non-clogging elevator. (2) Two-speed, fast-loading conveyor. (3) 42" forward gutter broom. (4) Full front axle designed to carry 20,000 lbs., with safety factor of 3 to 1. (5) 110 h.p. Ford automotive engine to provide utmost operating flexibility. (6) Four-speed, heavy-duty transmission that provides 3 sweeping speeds and a traveling speed of 20 to 25 m.p.h., with full load. (7) Full-floating suspension of pick-up and gutter brooms. (8) Rear wheel steering. (9) Hydraulic controls. (10) Pressure water spray system.

Because of its hopper size and traveling speed, the new WAYNE 450 *can perform the dual role of sweeper and pick-up truck.* Does away with the added expense of truck and crew.

In smaller cities, it can take its load directly to the city dump. In larger cities, its hopper size, sweeping speed and traveling speed make possible time-saving, equipment-saving and labor-saving *Central Dumping!*

Equipping your street department with the new WAYNE 450 Street Sweeper *can cut your sweeping costs in half!*

SWEEPS FASTER...SWEEPS CLEANER...SWEEPS MORE EFFICIENTLY

*Sold and serviced throughout the United States by a fine distributor organization.*

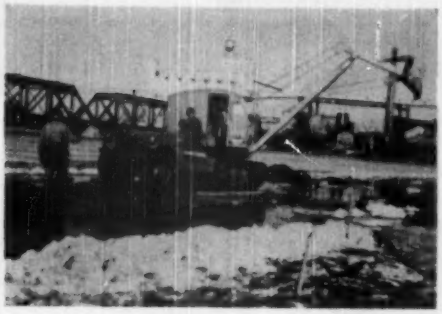
**WAYNE MANUFACTURING COMPANY**

MANUFACTURERS OF LIGHT DELIVERY VEHICLES, STREET SWEEPERS AND INDUSTRIAL SWEEPERS

1201 East Lexington Street, Pomona, California

CLEAN STREETS PAY DIVIDENDS IN BETTER HEALTH AND BETTER CITIZENSHIP

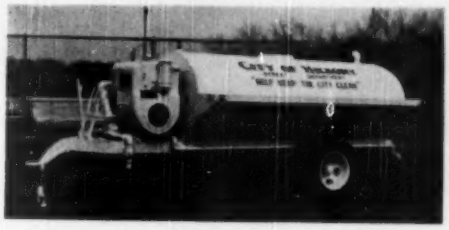
## Trenching Through River Ice for a Power-Line Conduit



In order to cut a trench in the bottom of the frozen-over Cedar River at Cedar Rapids, Iowa, a lightweight Bantam trench hoe was used. The procedure was a preliminary to laying a new cable for the Iowa Electric Light and Power Co.

The machine, which was driven 90 miles in three hours from the Shield Bantam Co., of Waverly, Iowa, has a 14-foot digging depth. The river was 700 feet wide and 8 to 10 feet deep, with an ice covering of 15 to 18 inches where the trenching took place. The entire 700-foot excavation was completed in 1½ days by the 8-ton Bantam.

## Trailer Street Flusher



The Gunnison motor-driven trailer street flusher and sprinkler is ready for use at a moment's notice, but leaves truck equipment available for other uses when the flushing equipment is not required.

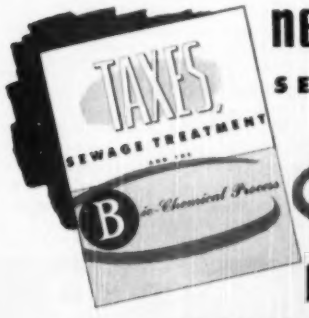
The machine has a 350-gpm centrifugal pump that provides pressure up to 100 pounds. Directly connected to the motor through a flexible coupling, it is mounted on the trailer directly in front of the tank. The motor is a 4-cylinder air-cooled Wisconsin that is rated at 22 hp at 2,600 rpm.

Elliptical in shape, the tank is 10 feet long, 42 inches high, and 60 inches wide. There are two adjustable flusher nozzles and two adjustable sprinkler nozzles, all made of brass. Extra equipment includes fire fighting hose and nozzle, electric clearance lights, self-starter, and brakes on the trailer.

The flusher is made by the Gunnison Mfg. Co., Baraboo, Wis.

## New Address for Maker Of Waste Receptacles

The City Beautiful Products Co., manufacturer of the Daybree aluminum waste receptacles, has moved from 1127 Wilshire Blvd., Los Angeles, to 363 North Camden Dr., Beverly Hills, Calif.


NEW BOOKLET on SEWAGE TREATMENT AND THE Bio-Chemical Process

PROVED • SIMPLE • ECONOMICAL

This interesting and useful booklet is available free upon request.

INFORMATIVE

THE BIO-CHEMICAL PROCESS

2266 North Meridian Street, Indianapolis 8, Indiana — 120 Broadway, New York 5, N.Y.

TARCO

*can carriers*

No. 16-S

*"Street Sweeper's Friend"*

Single-piece welded frame. Choice of tiring: pneumatic, solid rubber, plain steel. Roller bearings. Full swiveling caster wheels. Silent can clamp. Safety warning flag. Balanced and light running.

TARCO welded carriers are STRONG.

TARRANT MFG. CO.

East Ave. Saratoga Springs, N. Y.

PIPE FITTINGS

Warren fittings, like Warren pipe, are made in all sizes and to all standard patterns for use with cast iron pipe of standard designs.

Special castings to meet your individual requirements may make use of our large stocks of non-standard patterns.

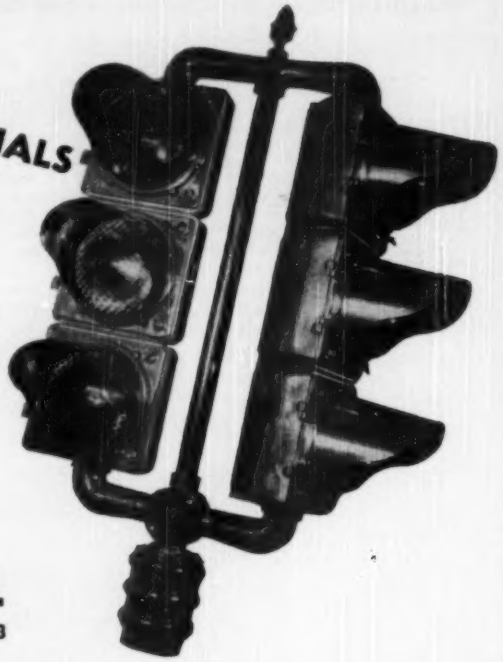
BELL & SPIGOT—FLANGE —SHORT BODY—PLAIN ENDS — MECHANICAL JOINT — SPECIALS

Sizes—2" to 84"

WARREN FOUNDRY & PIPE CORP.

55 Liberty St. New York, N. Y.
72 Federal Street Boston, Mass.

## AUTOFLOW TRAFFIC SIGNALS



- Universal mounting and adjustment
- Modernistic and streamlined in design
- Dust and weather proofed throughout
- Lightweight sectional construction
- Sections and parts 100% interchangeable
- Span-wire, mast-arm, bracket, pedestal or pipe mounting
- Spun aluminum Alzak reflectors
- Adjustable lamp focusing
- No tools required for inspections or adjustments

For Further Information, write or wire

**SOUTHERN SIGNALS, INC.**

222 Beach Street — Box 1303
Shreveport, Louisiana

CITIES REPORT

## 50% Savings WITH TURCO MAXI-POWER SEWER CLEANING UNITS

Here's a machine that has the power and stamina to stand up under the most severe sewer cleaning conditions. Widely used all over America. Beautifully designed and constructed for highest efficiency. Now is the time to Modernize, Powerize and Economize with Turco Maxi-Power Sewer Cleaning Units.

WRITE FOR CATALOG: Get the complete construction and operating story and learn how you too can make substantial savings with Turco Units.

### CHECK THESE *Exclusive Features*

1 TUBULAR FRAME . . . highest strength-to-weight ratio of any form of structure.

2 ENCLOSED GEARING . . . completely dust and dirt protected with oil bath lubrication.

3 SEALMASTER BEARINGS . . . Lubrication sealed in and dirt sealed out . . . built to last a lifetime.

4 PENDULUM-MATIC LEVEL WIND . . . This spooling unit is not mechanically linked to the winch drive; consequently, it automatically compensates for any change in rope diameter, stretch, speed or wear. Patent No. 2,452,297.

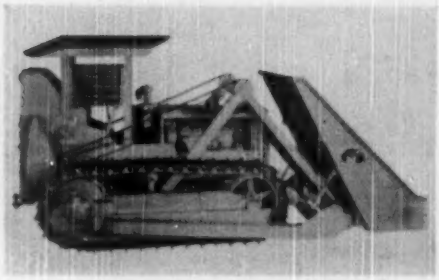
5 THREE-SPEED TRANSMISSION . . . with built-multiple disc clutch . . . oil bath lubrication . . . built for rugged service.

6 POSITIVE CONTROL IMPULSES transmitted by Remote Control smoothly and accurately . . . no toggles or linkages to cause lost motion.

## TURBINE SEWER MACHINE CO.

5210 W. State Street · Milwaukee, Wisconsin, U.S.A.

## Austin Adds Overshot Loader for Tractor Mounting



John Austin, Inc., Denver, Colo., has added to its line a one-cubic-yard Overshot loader for tractor mounting.

With a 20-second loading cycle, it handles bank-run material at a rate of 125 yards per hour on a 50-minute hour with no increase in fuel consumption over normal dozing operations. The Model 4-C is made in two heights, for surface operation and for underground mining. For surface operation the machine has an over-all height of 15¼ feet with bucket raised and a dumping clearance of 8 feet. For underground mining it has a height of 12 feet, bucket raised, and a dumping clearance of 6 feet.

## U. S. Testing to Inspect Turnpike Structural Steel

The U. S. Testing Co., Inc., of 1415 Park Ave., Hoboken, N. J., was awarded a contract to handle inspections of all structural steel for bridges on New Jersey's new turnpike. This work covers inspections at the rolling mills and fabricating shops of close to one hundred thousand tons of structural steel, castings, forgings, and incidental items. This is in addition to a previous award to the company of a contract for the testing of concrete aggregates, cylinders, and pipe.

## Stop Leaks Quickly In Concrete Reservoirs

A new product that the manufacturer states can stop leaks in concrete even when there is as high as a 40-pound pressure of water back of the leak is being offered as an aid in the repair of concrete reservoirs, tunnels, wet wells and similar surfaces. Known as Dasquik, the material is manufactured by the Dasco Co., Inc., 1602-4 Thames St., Baltimore 31, Md. The manufacturer reports that the material is now in use at the U. S. Submarine Base at New London, Conn., and other places where watertight concrete is essential.

The material is a purple liquid. When mixed with fresh Portland cement it produces an extremely fast setting mortar, giving an initial set in 15 seconds and a final set in 30 seconds. The manufacturer recommends mixing a small quantity of cement, 4 to 6 ounces, with 2 to 3 ounces of Dacquik. The recommended method of application is to form a pointed plug of the mortar, push it into the prepared hole, and hold it for 15 to 30 seconds.

## Onan Appoints Distributor

D. W. Onan & Sons, Inc., Minneapolis, Minn., has appointed the Nelson Equipment Co., 5251 S. E. McLaughlin Blvd., Portland, Ore., as distributors for its electric generating plants in the State of Oregon and a few counties of Idaho.


IT'S A REAL "GULLEY-WASHER"
STANDARD STEEL FLUSHER

TRUCK MOUNTED FLUSHERS
STREAMLINED FOR CIVIC PRIDE

T. F. TRACTOR FLUSHER CAN BE USED FOR FIGHTING FIRES AS WELL AS STREET CLEANING!

★ MODERN TO THE MINUTE
STANDARD STEEL FLUSHERS (both Tractor and Truck mounted) are built for heavy duty as well as "styled to the minute" like the finest motor cars!

★ HI-TENSION STEEL THROUGHOUT
STANDARD STEEL FLUSHERS are built of Hi-Tensile Steel—4 to 6 times less corrosive than blue annealed steel. Saves 15 to 20% dead weight.

★ 50 LBS. PRESSURE ON EACH NOZZLE
You get a hurricane "GUTTER to GUTTER" wash from any Standard Steel Flusher. (Comes in both front and rear engine mounted.) The 350 G.P.M. Pump and 20 H.P. engine on the Tractor Flusher makes this equipment an excellent piece of auxiliary fire fighting equipment. Write for FLUSHER catalog today.

OTHER PRODUCTS
Asphalt Pressure Distributors, Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Construction Brooms.

Built to Standard the Highest FL3

Standard Steel Works NORTH KANSAS CITY MO

REDUCE YOUR
REFUSE COLLECTION COST
WITH THE . . . . . .

# LOW COST

# St. Paul Pax-all
## REFUSE LOADER

***The packing unit for any municipal budget***

The price of the St. Paul Pax-all is much lower than you would think possible for this packing type refuse collection unit with its many advantages. Another important cost saving is that the Pax-all can be mounted on a lighter GVW chassis. Still a third saving is that installation of the Pax-all costs less. Maintenance and operating costs are lower. Use the coupon . . . get all the facts about the St. Paul Pax-all.

**OTHER ADVANTAGES:** Exclusive "Cram-Packing" feature means maximum payloads • Low loading height • Easily maneuverable in narrow alleys • Ideal load distribution in transit and dumping • Handles wet garbage and ashes as well as other refuse • Etc.

**ST. PAUL DIVISION**
**GAR WOOD INDUSTRIES, INC.**
**2207 University Avenue, S.E.**
**Minneapolis 14, Minnesota**

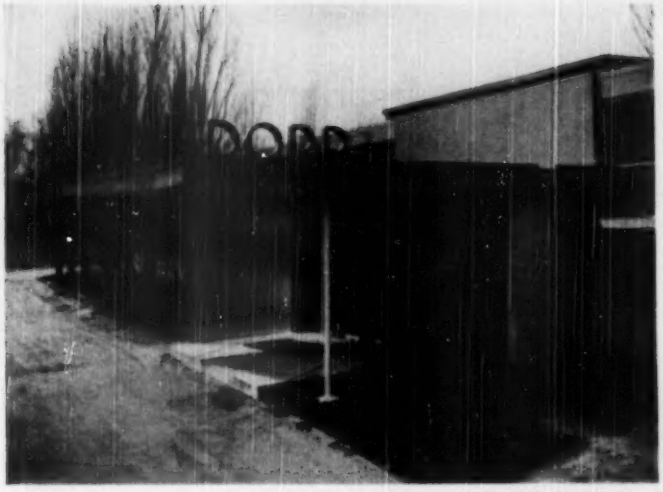
Mail It Today!

ST. PAUL DIVISION A
Gar Wood Industries, Inc., 2207 University Avenue S.E.
Minneapolis 14, Minnesota

Please send me information on how the low cost St. Paul Pax-all will reduce refuse collection costs.

NAME_____
POSITION_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

## Dorr's New Offices



**Shown above is the entrance to the new Dorr Company general offices at Stamford, Conn., which were officially inaugurated with an "Open House" from 3 to 6 p.m. Some 85 invited guests inspected the new offices and were present at a showing by the company of the color film, *The Dorr Way*.**

## Burrough's First Quarter

At the annual meeting of stockholders held last month by the Burroughs Adding Machine Co., Detroit 32, Mich., John S. Coleman referred to "our long-range research in the field of electronics, which promises to revolutionize the business machine industry in the years ahead. Developments will not be immediate and the results of our work in this new science may not take practical product forms for some time to come."

During the first three months of 1950, Burroughs' total domestic revenue was $20,374,769, an increase over both the third and fourth quarters of 1949. First quarter revenue this year was, however, 12% below the first quarter of last year when the total was $23,-251,917.

So far this year, two entirely new machines have been announced: the Burroughs Sensimatic accounting machine, described in THE AMERICAN CITY in May, and an automatic ticket-issuing and accounting machine for airlines and bus lines.

## Mantz Promoted By Diamond Alkali

John W. Mantz, previously industrial relations manager at the Painesville, Ohio, plant of the Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio, has been promoted to the position of assistant general manager of the plant. His former position will be taken over by C. R. Brown, who comes to Diamond from the National Enameling and Stamping Company, where he held the position of director of industrial relations.


**jari CUTS 6 ACRES A DAY!**

That's right . . . one man with a Jari Power Scythe cuts six acres of park lawn in eight hours. Cuts right up to trees and plantings . . . leaves grass long enough to resist crabgrass and burn-outs.

***HERE'S GOOD NEWS***

Keep park lawns weed-free with Jari Power Spray Attachment. Sprays 14 feet wide. Extra hose and boom reaches tall trees to kill insect pests. Write for full information.

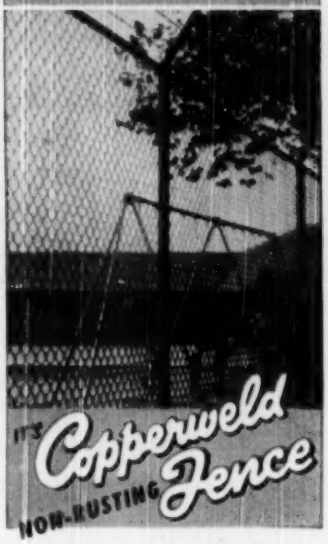
**jari** Jari Products, Inc. 2934B Pillsbury Ave. Minneapolis, Minn.

**POWER SCYTHE AND SPRAY**



**NEVER NEEDS PAINTING**

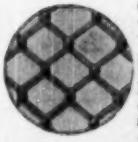
**NO MAINTENANCE COSTS TO WORRY ABOUT!**



**IT'S Copperweld NON-RUSTING Fence**

Copperweld* Chain Link Fence provides long life, low cost protection. It never needs to be painted—costs less per year than any other chain link fence. Write for a sample and descriptive literature. *Trade Mark

**COPPERWELD STEEL COMPANY**
**Glassport, Pa.**



Close-up of Copperweld Chain Link Fence. The strong steel core prevents sagging and breakage — the thick Molten-Welded copper covering provides permanent protection against rust.

**MAIL THIS COUPON**
FOR NEW CATALOG ON COPPERWELD CHAIN LINK FENCE

**Copperweld Steel Company**
Glassport, Pa.

Please send me your Chain Link Fence Catalog.

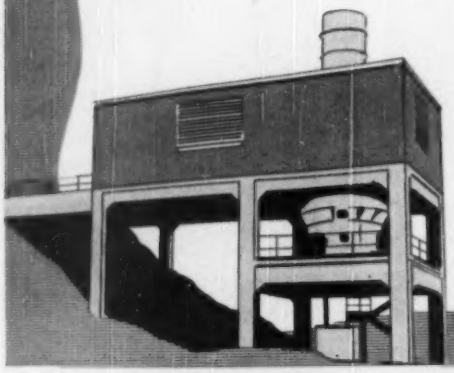
name _____

company _____

address _____

city _____ zone _____ state _____

# Now—Big City Refuse Incineration To Fit Small Town Budgets



**The New Nichols Vertical Monohearth Refuse Incinerator—with Mechanical Stoking and integral chimney—has been especially designed to meet the needs and budgets of small communities.**

**This new refuse incinerator (another Nichols first) brings to small communities all the features of big city refuse incinerator service at a cost the small town can afford. Astonishingly low first cost—big plant efficiency. Every small town should investigate the possibilities of this New Nichols Incinerator for their refuse disposal.**

***Write for details—today.***

**NICHOLS ENGINEERING & RESEARCH CORP.**
70 PINE STREET · NEW YORK 5, N. Y.

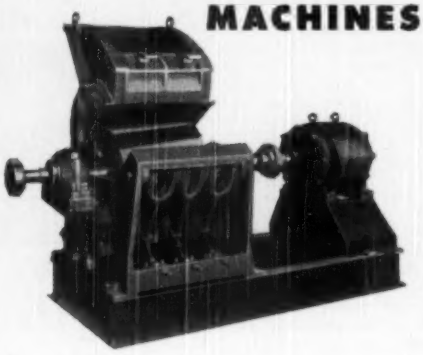
*Pacific Coast office:* 40 S. LOS ROBLES AVE. PASADENA, CALIF.
*In Canada:* 1472 SHERBROOKE STREET, WEST, MONTREAL 25

## FERRO STREET SIGNS

Embossed Porcelain Enamel
Designed for the Auto Age.
*Write Today for FREE Literature*

**FERRO ENAMELING CO.**
1100 - 57TH AVENUE, OAKLAND 3, CALIFORNIA
Gentlemen:
We are interested in your Street Signs for:
City .....
County .....State .....
Signed .....
Title .....

## M & M REDUCTION MACHINES



**These efficient machines will rapidly reduce otherwise unusable waste products to uniform size for easy handling. The product may be used as a fuel for municipal incinerators and power plants. M & M Reduction Machines are the most practical method of garbage disposal. Many applications are being made in industry for turning factory waste into valuable by-products. Cut disposal costs with M & M Reduction Machines. Send us your problems.**

**MITTS & MERRILL**
104 HOLDEN STREET • SAGINAW, MICHIGAN

## The Pax-all Refuse Collector Changes Manufacturer's Hands

The Pax-all loads at hip height.

The St. Paul Div. of Gar Wood Industries, Inc., 2207 University Ave., S. E., Minneapolis 1, Minn., has acquired the Pax-all enclosed sanitary refuse collection unit from Woodson Products. Originally designed and built by George Wood, the Pax-all is now constructed with the St. Paul Model 53 underbody hoist.

The Pax-all has a packing device that extends the full width of the body interior and exerts force enough to achieve maximum payloads. Produced in 9- and 12-cubic-yard sizes, the unit can be installed on a relatively light-truck chassis.

## Lull Appoints Sales Manager

Herbert C. Lull has been appointed sales manager of the Lull Mfg. Co., Minneapolis, Minn. He will supervise the work of the sales representatives, and direct the sales promotion of the company's line of Shoveloaders, Tilting-Tower Universal loaders, fluid-driven sweepers, shoulder Maintainers, Lull-dozers, Traveloaders, and Fork-lift trucks.

H. C. Lull

Before his latest appointment, Mr. Lull was district manager in the Chicago area in the truck and coach division of the General Motors Corp. Before that he was in the sales division of the St. Paul Hydraulic Hoist Company.

## Solvay's New Package

The Solvay Sales Div., Allied Chemical and Dye Corp., 40 Rector St., New York 6, N. Y., has adopted a polyethylene-lined paper bag for its flake calcium chloride. The new packaging is stronger, possesses a higher resistance to moisture, and has a longer storage life than the conventional asphalt-lined bag previously used. In addition, the new lining does not crack in cold weather nor melt in hot weather.

## Cataphote Awarded Contracts

The Cataphote Corp., Toledo, Ohio, has been awarded California and Ohio State highway contracts to supply glass beads or spheres for centerline marking to make white or yellow centerlines more visible at night.

## Vaughan Promoted

K. A. Vaughan has been advanced to the newly created position of manager of sales engineering by the Gould Storage Battery Corp., Trenton, N. J. He will supervise field engineers and service stations.


**28 PAGES OF *Money Saving Ideas!***

BLAW-KNOX
STEEL STREET FORMS
for CONCRETE CURB AND GUTTER INTEGRAL CURB SIDEWALKS, ETC.
CURB AND GUTTER FORMS
For combining concrete curb and gutter when curb is battered.
STRAIGHT CURB FORMS
For curb with both faces vertical. Auxiliary bracing system for lateral stability.
SIDEWALK FORMS
Furnished for any required width or thickness of sidewalk.
FLEXIBLE STEEL RADIUS FORMS
For curved work of variable radius. Back forms, gutter forms and battered curb face forms can be set to any desired radius.

*Send for*
**BULLETIN 2259**
*today*

28 pages of detailed illustrations show form set-ups for every type of work with complete instructions on how to use them. You'll find *your* job illustrated, making it simple to select the forms you need. Start your set of Blaw-Knox Steel Forms now—expand it any time to meet future needs. Write for your copy of Bulletin 2259 today!

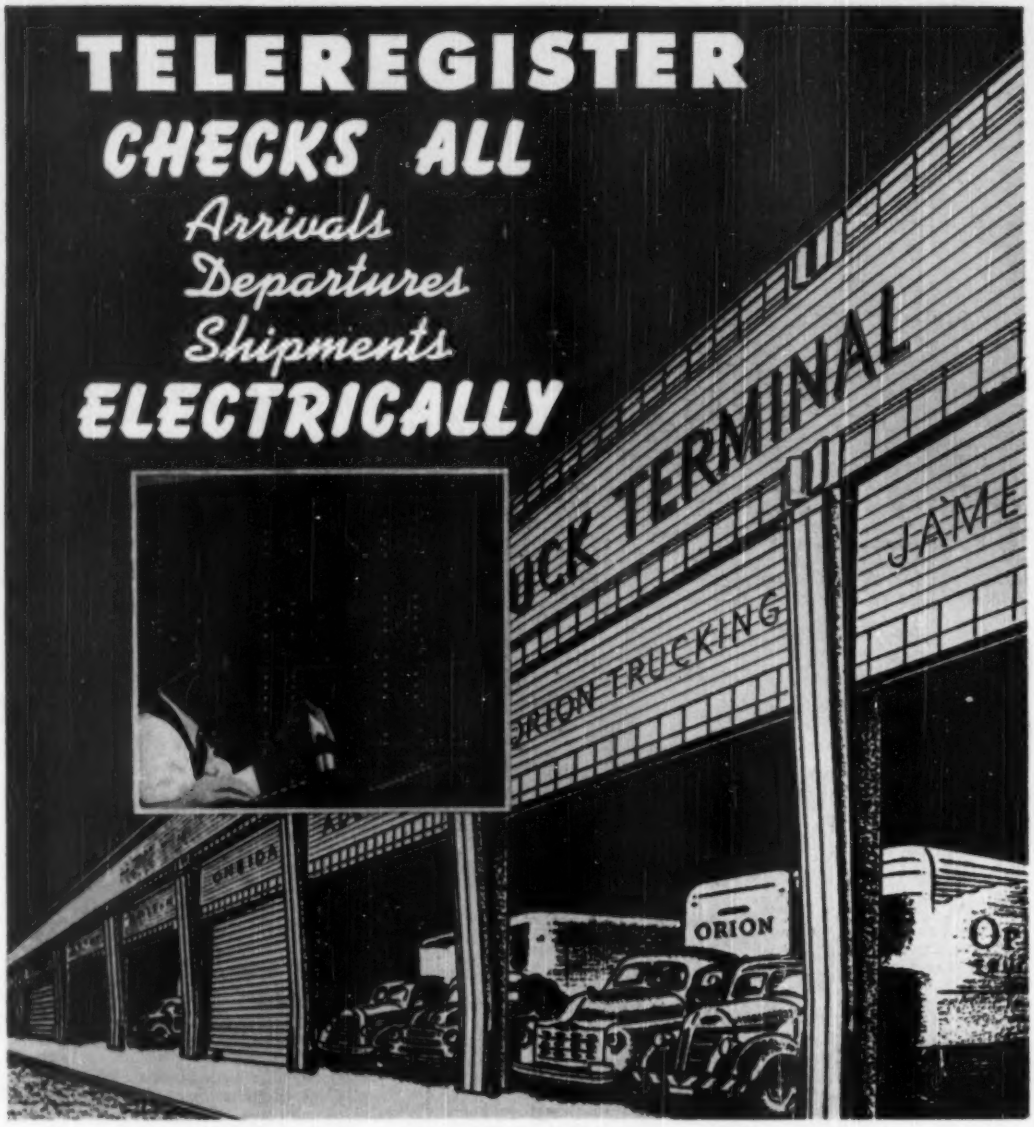
**for every Curb, Gutter and Sidewalk Job!**

Get this big money-saving bulletin now—see how easy it is to save money and speed completion of every job with Blaw-Knox Steel Curb and Gutter Forms. There's no need to use expensive lumber and carpentry labor when Blaw-Knox Steel Forms do the job BETTER (without costly hand finishing)—FASTER (they're so easy to set and strip)—and CHEAPER (you can use them over and over, in combinations to meet every job requirement, fit every shape).

**BLAW-KNOX DIVISION of Blaw-Knox Company**
2009 Farmers Bank Bldg., Pittsburgh 22, Pa.
Birmingham • Chicago • New York • Philadelphia • Washington

**BLAW-KNOX**

# TELEREGISTER
## CHECKS ALL
*Arrivals*
*Departures*
*Shipments*
## ELECTRICALLY

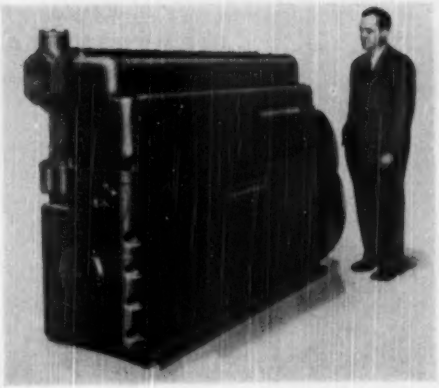



**For existing Truck Terminals and for the one your city is planning—be sure to include the proved advantages of remote control of all truck shipments. Save money, time, errors. Speed deliveries and gain the thanks of your citizens.**

**Two installations are now complete for The Port of New York Authority at its New York and Newark truck terminals—the two largest truck terminals in the world. Write for facts now. . .**

**THE TELEREGISTER CORPORATION**
157 Chambers St., New York 7, N.Y.

## Ingersoll-Rand's New Engine



The Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y., has announced a new type of diesel engine in the 195-375-hp range. Features of the TS diesel are that it can be made portable, but is not of the automotive type; it is small in size and light in weight, but has moderate speed; powerful, but with low exhaust temperature; and balanced, but with no balancing devices. The engine is a 4-cycle, 7-inch bore, 8½-inch stroke, single-acting machine with a weight of about 30 pounds per hp and a fuel consumption of .40 pounds per hp-hr.

The cylinders are provided with replaceable, wet-type liners and individual heads with overhead valves and intake and exhaust valve-seat inserts. The thick-wall, long-skirt pistons are of aluminum alloy, with ventilated oil-scraper rings above and below the full-floating piston pins. Torsional vibration without the use of dampers is eliminated by the crankshaft's 5¼-inch diameter at both crankpin and main bearings.

Both the main and crankpin bearings have aluminum alloy, full-floating interchangeable shells. The camshaft, blower, water pump, and lubricating-oil pump are all gear-driven from the flywheel end of the machine, permitting power take-off from either end. Individual fuel injection pumps serve each cylinder, with two single-hole non-clogging nozzles per cylinder. The engine is full-pressure lubricated throughout, and is equipped with a gear-driven mechanical supercharger which supplies air for increasing initial pressure in the cylinders and for scavenging during the latter part of the exhaust stroke.

Normal starting is by 250-psi air admitted to all cylinders in turn through a starting-air distributor; other methods of starting can also be furnished.

## All-Steel Waste Receptacles

The Industrial Products Co., 2855 N. Fourth St., Philadelphia 33, Pa., is producing a line of sanitary, all-steel waste receptacles finished in white or green baked enamel.

Fitted with two independent self-closing doors operated by a simple counterweight on the inside, the receptacles' doors swing inward and both may be used at the same time without interference with each other.

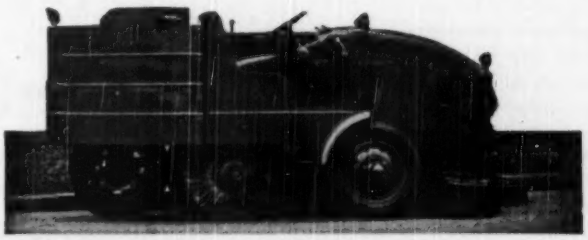
The top section is hinged and may be turned back for full access to the inside of the receptacle; a separate inner bag or metal container facilitates disposal.

Heights vary from 24¾ to 46 inches.

SCIENTIFICALLY DESIGNED
**STEEL FOLDING CHAIRS**
for COMFORTABLE and SAFE seating for MEETINGS—AUDITORIUMS—INSTITUTIONS
**100% COMPACT**
Fold down to 2" thin
EASY TO SET UP—EASY TO FOLD
Buy Clarin chairs with confidence—the result of 25 years of folding chair experience.
**write CLARIN MFG. CO.**
4640 W. Harrison St., CHICAGO 44, ILL.
Write for folder Dept Y-6
These are more Clarin steel folding chairs in institutional service than any other make

South Bend
**GUTTER-SNIPE**
*Model "E" Pick-Up Street Sweeper*

- 2-cubic yard hopper
- 3 sweeping speeds
- Sweeps 6 feet wide
- Turns in 19' circle
- Goes up a 10% grade



*We also manufacture SOUTH BEND "Big 6" Street Flushers, Bituminous Distributors, Bituminous Maintenance Units, and Gravity and Pressure Sprinklers.*

**Municipal Supply Company**, South Bend 23, Indiana, U. S. A.
Export Department — 44 Whitehall Street, New York 4, N. Y.

# John BEAN
## SHADE TREE EQUIPMENT

Rotomist (above) is readily mounted on light truck. It gives you better shade tree protection; saves material; cuts manpower; makes light work of what were formerly tough jobs handling spray guns.

## Built to Fit All Your Needs

If you want fast operation, with thorough coverage and fatigue-free, one-man control, then the Bean Rotomist is the answer. The new 1950 Rotomist has many new design refinements and features that more than ever make Rotomist the best way to apply concentrates, dry dust or wet dust. Its aerodynamic design releases micron-sized spray particles that give complete coverage with a minimum of drift. It also eliminates deposit of spray material on cars or homes. The operator has full visibility for efficient, easy operation with responsive hydraulic controls. Write for free Rotomist Catalog.

Whether your needs call for a conventional high pressure sprayer or a Rotomist concentrate applicator, you'll save time, money, material and maintenance cost with John Bean equipment.

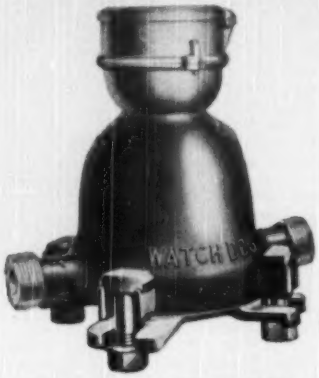
The John Bean line includes high pressure sprayer models with outputs to 60 gallons per minute at pressures to 800 lbs. And, for hard-to-reach areas, back yards, etc., there are portable John Bean sprayers and concentrate applicators. Write for free complete information on John Bean specialized shade tree and pest-control equipment.

fmc

**John BEAN**
LANSING 4, MICHIGAN

Division of Food Machinery and Chemical Corporation

# WORTHINGTON-GAMON



## LIQUID METERS

All Sizes All Types

**Worthington-Gamon Meter Co.**
*Subsidiary*
WORTHINGTON PUMP & MACHINERY CORP.
296 South Street Newark 5, New Jersey

your city deserves the best —
UNITED STATES BRONZE TABLETS...

for signs, statues, cornerstones, homes, hospitals, schools, municipal buildings

One of the country's largest plants devoted exclusively to bronze tablet work assures you of the *finest* in bronze at *lowest* prices. Free samples, sketches, estimates — prompt mail service. WRITE TODAY FOR FREE CATALOG!

"Bronze Tablet Headquarters"
**UNITED STATES BRONZE** SIGN CO., INC.
570 Broadway, Dept. AC, New York 12, N. Y.

# LEADITE

**FOR JOINTING CAST-IRON WATER MAINS**

*Melted and Poured* *No Large Bell-holes to Dig*
*Saves at Least 75%*

Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years ● Leadite joints improve with age.

*Be sure it is Leadite and accept no imitations*

THE LEADITE COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.

## Simplex Wire and Cable Makes Personnel Appointments

The following personnel changes have been made by the Simplex Wire and Cable Co., 79 Sidney St., Cambridge 39, Mass.: (*from left to right*) E. W. Davis has been appointed Director of Engineering; G. L. Roberts has been elected vice-president, and will remain in charge of sales activities; G. J. Crowdes takes over Mr. Davis' previous position of chief engineer; G. A. Grauer has been appointed sales manager; and E. J. MacKenzie has been appointed advertising manager.

## New Transformer Welder From Hobart Brothers

The Hobart Brothers Co., Troy, Ohio, has announced a new line of transformer AC arc welders which have no moving parts—by means of an electrically adjustable reactor, the usual laborious cranking method of setting welding current has been eliminated.

Control of the five main taps of welding current from low to maximum is accomplished by a large, easy-to-move hand wheel switch. Above this hand wheel is the rheostat control knob which controls the amount of DC current flowing into the reactor to give 100 fine welding current settings in each of the five main steps or ranges. Thus, about 500 different welding current settings are available without changing electrode or ground cable connections and without cranking.

By connecting the rheostat to the reactor circuit through a standard plug and receptacle, remote control is made possible on all models. The rheostat can easily be removed and used at a distance from the welder by inserting an ordinary extension cord with standard plug and receptacle.

## New District Offices For Cla-Val Company

The Cla-Val Co., P. O. Box 949, 1600 Orange St., Alhambra, Calif., has opened three new offices:

5579 Pershing Ave., St. Louis, Mo.; D. W. Capstick, manager.

402 Swetland Bldg., Cleveland 15, Ohio; Ronald C. Keech, manager.

2480 16th St., Washington, D. C.; Ward Converse, manager.

The company manufactures the Clayton line of valves, and has recently started production of the No. 81 check valve designed for handling water, oil, air and some gases. The valve opens and closes at a controlled rate.

**Save...**

**switch to WARSOP drills and breakers**

***It's real economy***

★ Low Initial Cost ★ Low Maintenance Cost
★ Low Operating Cost ★ Low Transportation Cost

No Battery • Positive Dual-Fan Cooling
Variable Speed Control • No Springs
Completely Self-Contained

There's real Savings when you use Warsop Portable Rock Drills and Breakers on all types of construction and demolition work. With Warsop hard-hitting power tools you need no cables, no hose. Compact and light in weight, they are easily transported from job-to-job. Wherever you have breaking or drilling jobs that require only one or two machines figure to use WARSOP. You'll save time, labor and equipment costs.

*Write for descriptive folders and specifications.*

**WARSOP POWER TOOLS, Inc.**
347 NORTH 12TH STREET, PHILADELPHIA 7, PA.

**Warsop**
**PORTABLE DRILLS—BREAKERS**
**self-contained—gasoline engine driven**

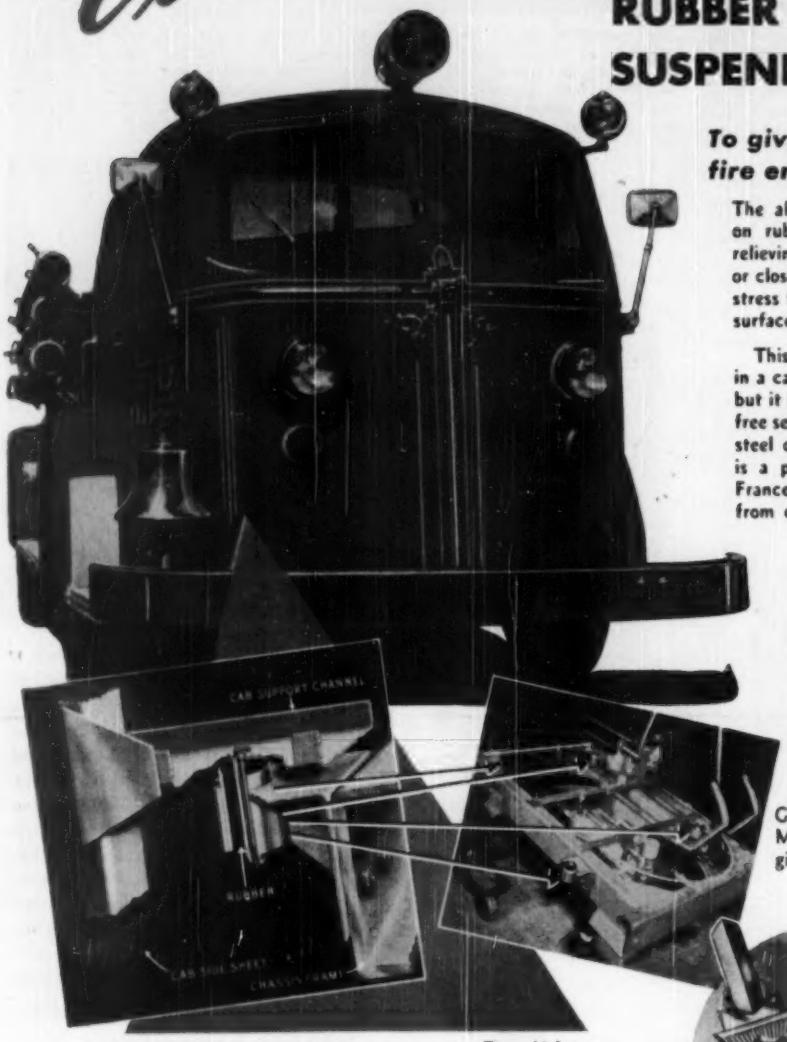
THERE'S *Extra Value* FOR YOU *in* AMERICAN-LAFRANCE FIRE ENGINES

# RUBBER MOUNTS SUSPEND THE CAB

***To give YOU a better fire engine . . .***

The all-steel cab is *suspended* on rubber at four points, thus relieving the cab — either open or closed type — of all distortion stress from rough or uneven road surfaces.

This *extra value* is not seen in a casual exterior inspection — but it is there to give you trouble free service. The heavy gauge all-steel cab with wide heavy doors is a product of American-LaFrance — built in our factory from our own dies and fixtures.




The four points of suspension by rubber provides shock and stress insulation not possible with compression mounting or bolting the cab directly to the frame.

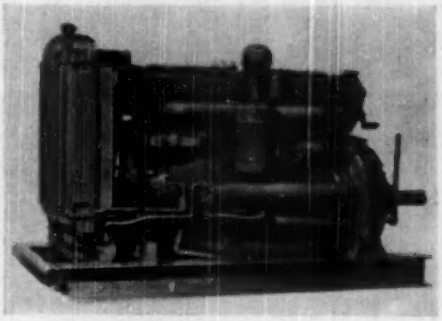
Get all these *Extra Values!* Make sure your next fire engine is American-LaFrance.

Third in a series of advertisements on the *Extra Values* in American-LaFrance Fire Engines.

AMERICAN-LAFRANCE-FOAMITE CORPORATION
ELMIRA, NEW YORK, U.S.A.

LAFRANCE FIRE ENGINE AND FOAMITE LIMITED
TORONTO 9, ONTARIO, CANADA

## Murphy Diesel Extends Line



The Murphy Diesel Co., 5317 W. Burnham St., Milwaukee 14, Wis., has increased its line to five 4-cylinder models and six 6-cylinder models ranging in output from 90 to 200 hp. The engines all have plain open combustion chambers, four valves per cylinder, and hydraulic servo-type governors.

## Scott Aviation Appointment

L. E. Jordan has been appointed general sales manager of the Scott Aviation Corp., 191 Erie St., Lancaster, N. Y. He will handle sales of the company's aviation, safety, and medical products.

## Leeds & Northrup Opens New Office

The Leeds & Northrup Co., Philadelphia, Pa., manufacturer of electrical measuring instruments, automatic controls, and heat-treating furnaces, has opened a sales and service office in the Lloyd Bldg., 603 Stewart St., Seattle 1, Wash. Stratford B. Biddle, Jr., is the manager.

## Low-Cost Road Marking

The operator can easily see the field of operation.

Until recently the municipality had the choice of purchasing either expensive equipment to do the job of marking centerlines on roads and streets, or of buying small, walking apparatus that—while less expensive to buy—uses up a great volume of time and of paint.

Into the picture now comes a small riding tractor with special equipment and attachments for road marking. Selling under a thousand dollars complete, the new machine is operated by one man who rides. A tank is attached to the rear of the machine. Paint is fed through a spray gun under pressure so that one gallon of paint will provide markings for as much as 5 miles of roadway.

The machine, manufactured by the Beaver Tractor Co., Inc., Stratford, Conn., loads aboard any small truck and is transported to the job. Once the Beaver is set in motion, all action is automatic at a travel rate of 5 to 6 mph.


AMONG WATER WORKS MEN...

THE ELLIS PIPE CUTTER

is *Best* FOR CUTTING LARGE SIZES OF PIPE

No. 01 Cuts Pipe 4" to 8" | No. 1 Cuts Pipe 4" to 12"

Write for circular and price list No. 33AC, on our complete line of pipe cutting tools.

ELLIS & FORD MFG. CO.
FERNDALE 20, MICH.

GIVE YOUR CITY A LOW FIRE LOSS RECORD

REDUCE LOSS FROM WATER DAMAGE WITH FULTON *Shuredry* GREEN-BAK SALVAGE COVERS

Specially treated to resist water seepage or penetration, pliable, easily handled and long lasting, Shuredry Covers are a protection you can depend on — an investment to *cut down fire losses*. Specify Fulton Shuredry Green-Bak Salvage Covers on your next purchase. Order from your fire equipment dealer.

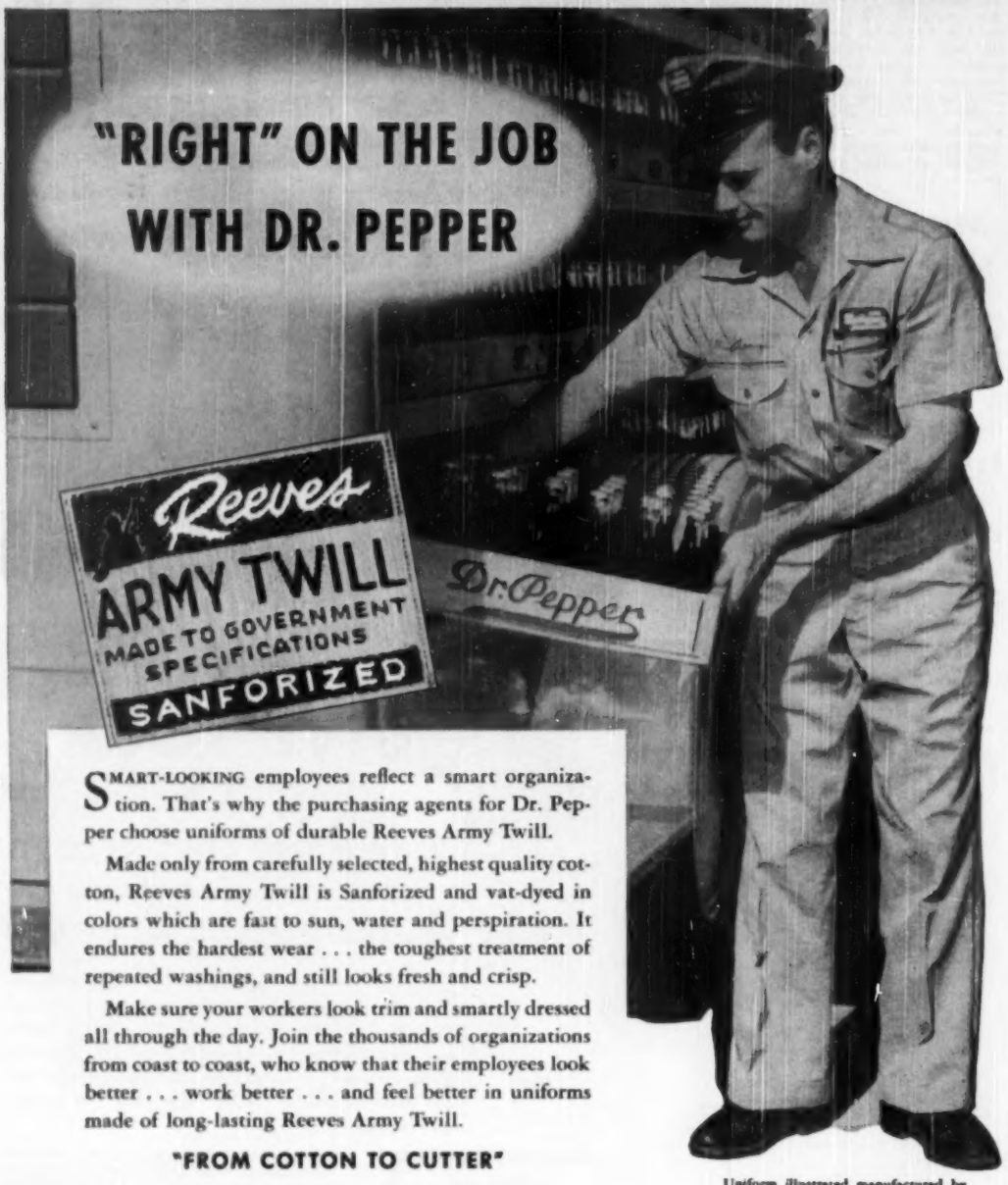
APPROVED by National Board of Fire Underwriters and by Factory Mutual Laboratories.

Use Fulton Triple-Strength Tarps of 1,000 uses — for garbage truck covers and protection of equipment and supplies exposed to weather.

Fulton BAG & COTTON MILLS

Atlanta • St. Louis • Dallas • Denver • Los Angeles
Kansas City, Kans. • Minneapolis • New Orleans
New York, 434 Broadway • Winter Haven, Fla.

# REEVES ARMY TWILL




SMART-LOOKING employees reflect a smart organization. That's why the purchasing agents for Dr. Pepper choose uniforms of durable Reeves Army Twill.

Made only from carefully selected, highest quality cotton, Reeves Army Twill is Sanforized and vat-dyed in colors which are fast to sun, water and perspiration. It endures the hardest wear . . . the toughest treatment of repeated washings, and still looks fresh and crisp.

Make sure your workers look trim and smartly dressed all through the day. Join the thousands of organizations from coast to coast, who know that their employees look better . . . work better . . . and feel better in uniforms made of long-lasting Reeves Army Twill.

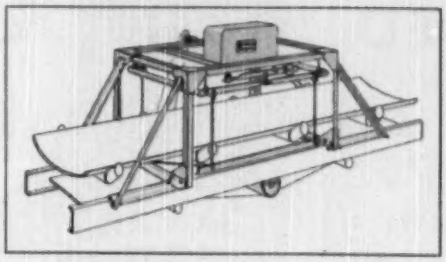
**"FROM COTTON TO CUTTER"**

Uniform illustrated manufactured by T. S. Lankford & Sons, Abilene, Texas

**REEVES BROTHERS, Inc.** 54 WORTH STREET, NEW YORK 13, N. Y.

REPRESENTATIVES IN: *Akron • Atlanta • Boston • Chicago • Dallas • Los Angeles • Philadelphia • Portland, Oregon • St. Louis • Montreal • Toronto*

## Belt Conveyor Scale Weighs Sewage Sludge



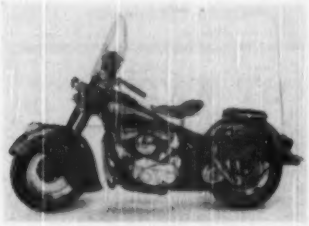
The Sintering Machinery Corp., 70 Pine St., New York 5, N. Y., has put on the market a belt conveyor scale which is completely assembled and shipped as a complete unit requiring less than a dozen bolts for installation.

It is particularly useful for weighing sewage sludge after being dewatered in a vacuum filter.

The Transportometer can be installed on belt conveyors for any width to automatically and continuously weigh, integrate, indicate and totalize the tonnage without the necessity of electrical or pneumatic connections for its operation.

Remote mounting type of duplicate tonnage Totalizers and chart recorders can be finished and the Transportometer is available with a regulatory system for controlling the addition of dried sludge.

## New Motorcycle For Police Work



**Shipments of these Chief models have already been made to New York City, El Paso, Texas, and a number of other cities.**

The Indian Motocycle Co., Springfield, Mass., is manufacturing a new heavy Chief model motorcycle for police work that features a telescopic fork incorporating a metering device which regulates fork springing to the road conditions.

A cam-type torque-evener cushion sprocket fitted to the drive shaft increases the flexibility of all gears and provides smoothness in city traffic driving.

The model is equipped with an 80-cubic-inch, 40-hp, Blackhawk engine.

## Tower Bell and Music System

Monobell is the name of a new tower bell and music system made by the Maas Organ Co., 3015 Casitas Ave., Los Angeles 39, Calif., for schools, churches, and municipal institutions. The Monobell does away with expensive bell tower construction and the expensive cast bells.

The system may be used, also, as a warning and signaling device in emergencies, and with the addition of a microphone as a public address system.

In addition to the Monobell itself, the tower system includes a built-in record player. Through the addition of the microphone and auxiliary speaker, overflow crowds can be reached.

It produces a deep tone equal in timbre to that of a $20,000 cast bell. It is operated by a button or key installed in the amplifier. The Model 511, which costs $375 including amplifier, Monobell tone unit, record player, tower speaker, monitor speaker, and speaker cable, sounds over a diameter aea of ½ or 1 mile; the 521 covers a diameter of ¾ to 1½ miles.

NEW!
PATHFINDER
PIPE LOCATOR
NOW TRADE-IN YOUR OLD PIPE LOCATOR
★ Powerful Precision Unit
★ Economically Priced
★ Lifetime Guarantee
PATHFINDER is today's BEST BUY! This amazing new 1950 pipe locator is FIRST with a liberal trade-in allowance for your old equipment — first with all vital features combined in one handy, compact unit.
Take advantage of this money-saving opportunity. Get the facts at once and you'll buy a PATHFINDER!
Quickly and accurately locates position and depth of pipes, tanks, valves and buried tools.
Write! State model and year of locator to be traded
PATHFINDER COMPANY
1720 Beverly Drive • Pasadena 7, California

*The* **FRED W. HANKS CO.**

**MANUFACTURERS OF NOWARP AND RUBBER DISCS FOR ALL MAKES OF METERS**

35 years of proven dependability, meeting the most exacting demands in the Water Works Field. That's The Fred W. Hanks Co., suppliers of nearly 3,000,000 discs. Specify Hanks Nowarp or Rubber when ordering and get the best for less.

We also have a complete Meter Repair Department at our new location.

We call your attention to our new Hanksite Stuffing Box Spindle Packing.

**646 E. 106th ST. ★ CLEVELAND 8, OHIO**

# McWANE'S PRECALKED

the CAST IRON PIPE with the FOUNDRY MADE JOINT

Minutes count when you are trying to beat the weather.

The joint materials, pure lead and redwood wedges, are already in the bell. With PRECALKED you simply "Socket the Spigot and Calk."

**McWANE CAST IRON PIPE CO.**
Birmingham 2, Alabama

---

# Sign up for SAFETY!

**For safety on the streets, for effective traffic guidance, for speed and convenience of local deliveries—the progressive and economy-minded city marks its streets with GROTE Street Name Markers. They are long-haul economy because they are built and finished for many years of maintenance-free use — the sturdy surface never chips, cracks or crazes to let moisture penetrate and rust the metal.**

*Sign up for safety—and for longest service with GROTE Street Name Signs. Write for details.*

the Grote MFG. CO., INC.
GROTE SQUARE BELLEVUE, KENTUCKY
OPPOSITE CINCINNATI

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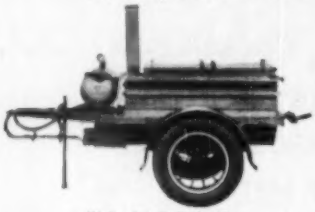
**Connery's Style W Heating Kettle Made in 75, 110, 165 and 210 Gallons.**



**For speedy heating of Tar and Asphalt for road, street and airport runway repairs use Connery's style W kettle, the most efficient heating kettle of its kind.**

*Write for Bulletin 87.*

**CONNERY CONSTRUCTION CO.**
4000 N. Second Street Philadelphia 40, Pa.

---

## LOW-COST WATER
### *from Caisson Wells*

The Caisson Well, a large reinforced concrete well with a diameter 7 to 20 feet, or more, may solve your water problem economically and permanently. Highly efficient in water bearing formations, as shallow as 10 feet. Lifelong installation requiring practically no maintenance.

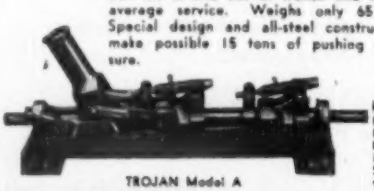
*Write for information*

**CAISSON WELLS, INC.**
*Ground Water Engineers and Contractors*
33 W. 42nd Street, New York 18, N. Y.

---

**The TROJAN pipe puller and pusher — Cuts Costs! Saves Time!**
**• Simplifies installation or renewing water and gas service lines under pavement**

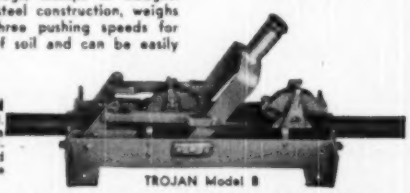
MODEL A—for ½" to 1" pipe. One man can lift in and out of trench and install average service. Weighs only 65 lbs. Special design and all-steel construction make possible 15 tons of pushing pressure.



TROJAN Model A

**DOUBLE ACTION AND CONTINUOUS OPERATION**
No re-setting or grip required. Push pipe is made of double extra heavy steel pipe with inside couplings for butt joint. Pilots and Special Couplings will handle variety of jobs.

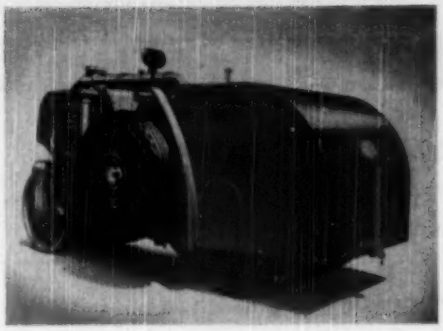
MODEL B—will push up to 2" pipe without additional dogs, clamps or wedges. Heavy duty, all-steel construction, weighs 140 lbs. Has three pushing speeds for different types of soil and can be easily reversed.



TROJAN Model B

**The TROJAN Manufacturing Co., 441 East Water St., Troy, Ohio**
41 GREENWAY—HAMDEN, CONN. BOX 465—MEMPHIS, TENN.

## Retractable Wheel Roller Travels To Jobs Without Loss of Time



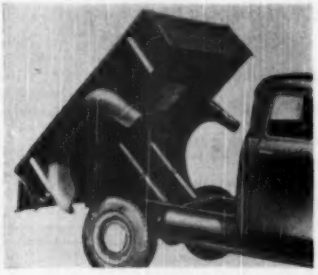
The Huber Mfg. Co., Marion, Ohio, has put on the market a retractable wheel roller which does the work of a full 5-ton tandem yet can be towed at normal highway speeds.

The roller uses its own power to raise and lower the trailing mechanism that is built integral with the frame. While the roller is being towed, the rolls ride nine inches from the ground.

Powered by a 4-cylinder air-cooled gasoline engine, the roller's final drive is through a heavy-duty roller chain running on heat-treated sprockets. Hydraulic power for lifting or lowering the trailing wheels is supplied by a gear pump driven by an adjustable-tension V-belt from the engine crankshaft.

## Dump Box for Pick-Up Trucks

The Hercules Steel Products Corp., Galion, Ohio, has introduced a new pick-up dump conversion which provides fast unloading of pick-up trucks.



In the dump position.

Called the Tipster, the accessory converts ½-, ¾-, and 1-ton pick-ups into efficient dump trucks. The main elements are a Hydra-Clutch pump, which is a clutch-type hydraulic pump that is powered by the fan belt and operates only when dumping; a steel understructure for mounting under the pick-up body; twin-cylinder hydraulic hoist rams; oil tank; fan belt; hydraulic hose; mounting brackets, and dashboard control. Unloading is accomplished from the cab of the truck by the single finger-tip dashboard control.

## Iowa Adds Holland Products, Personnel to Cedar Rapids Line

The Iowa Mfg. Co., Cedar Rapids, Iowa, has acquired the complete inventory, manufacturing rights, and patents on the line of double impeller impact breakers, vibrating screens, roll crushers, and feeders formerly made by the New Holland Mfg. Co. of Mountville, Pa.

Iowa also appointed to its staff several members of the New Holland organization: V. R. Despard, Jr., formerly vice-president and general manager; J. D. Pfahl, assistant to the sales manager; and Bud H. Kessler, New Holland chief engineer, as well as four other New Holland engineers.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Here are a few of a wide range of high-quality products Stewart manufactures for the protection and beautification of all types of public property. There are many more. So if the product you need is made of iron, wire or bronze, it will pay you to write us.

PLAGPOLES—Made of full weight standard pipe, heavily galvanized. Furnished with pulley, but not rope. When writing for prices please give desired height above ground line.

Stewart CHAIN LINK WIRE FENCE is made in several styles, heights and weights with or without arrangement for barbed wire overhang. Style OTM with iron gate is illustrated.

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Stewart IRON PICKET FENCE is available in an unusually wide range of designs and in plain or ornamental iron. Walk and drive gates are made to match line of fence.

WINDOW GUARDS (wire or iron) in standard or special sizes to fit any size or shape opening. When requesting prices please send sketch and give all measurements.

No. 370 SETTEE—Comfortable, attractive, long-lasting. Framework is galvanized after fabrication for maximum resistance to rust. Wood slats painted green. Made in 4', 5' and 6' lengths. Prices on request.

Other products: Iron Railings, Steel Folding Gates, Ornamental Iron Lanterns, Grilles, Bronze Plaques, etc. When requesting literature, please mention products in which you are especially interested. This enables us to send correct catalogs

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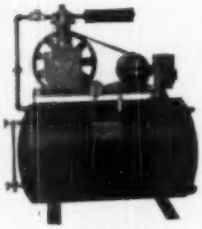

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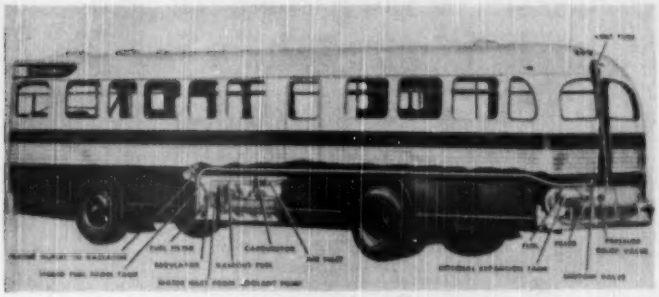
**VALVE AND PRIMER CORPORATION** 127 NORTH DEARBORN ST., CHICAGO, ILL.

## Buses Powered by Propane



**This Fageol Twin Coach is the first standard-line motor bus to be powered by a propane fuel system. Among the advantages claimed by the manufacturer, the Twin Coach Co., Kent, Ohio, for the use of this 125 octane fuel are a 50% increase in time between engine overhauls, and average savings up to 2c per mile on fuel.**

## Bucyrus-Erie Company Gets New Distributor

The Bucyrus-Erie Co., South Milwaukee, Wis., has appointed Epperson & Co., Tampa, Fla., as distributors for its Hydrocrane. The all-hydraulic truck-mounted crane comes in a ¼-yard, 2-ton-capacity machine, and a ⅜-yard, 3-ton-capacity machine.

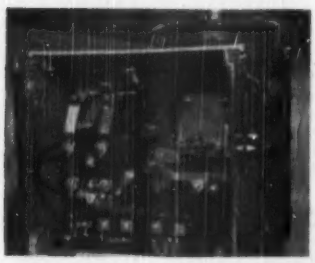
The distributor will continue to handle Bucyrus-Erie's line of ⅜- to 4-yard gasoline, diesel, and single-motor electric excavators.

## Bookkeeping Desk for Utilities

A new combination bookkeeping desk and one-hour fire-resistant safe is offered by Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y.

The unit is adaptable for use in either the Unit, Group, Station, or Specialized plans of bookkeeping and can accommodate either the stub, tab card, or register binding filing systems.

## New Safety Device



The Electro Chemical Supply and Engineering Co., 750 Broad St., Emmaus, Pa., is making an electrical control designed as a safety device to protect water-cooled, electrically operated equipment, such as air compressors and vacuum pumps, against damage through water failure.

The Esto water control can be adjusted to operate at any water flow that the equipment requires, eliminating the possibility of overheating. If the water supply fails, a weighted lever falls which opens the circuit and the relay stops the equipment, or sounds an alarm, or does both. The compressor will not start until the water has been turned on.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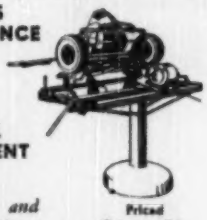

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This Seagrave built engine develops more horsepower per cubic inch of piston displacement than any other type of fire apparatus motor. It is compact and rigid, has a lightness of reciprocating parts and a seven-bearing, counter-balanced crankshaft.

The stamina, long life, flexible power and efficiency of operation have made the Seagrave V-12 the most outstanding motor ever built for fire service.

**THE SEAGRAVE CORPORATION**
Columbus, Ohio
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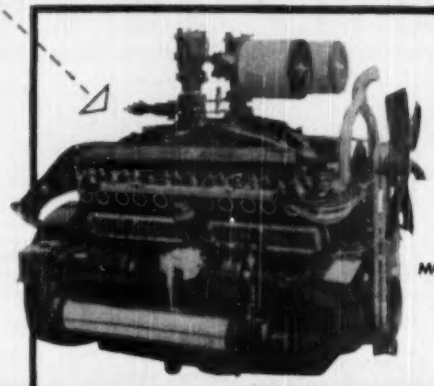

MODEL 12-JB

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Seagrave V-12

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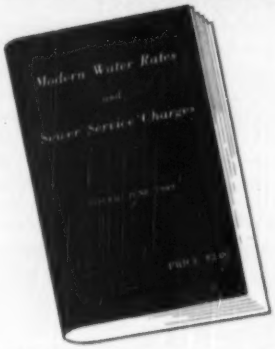


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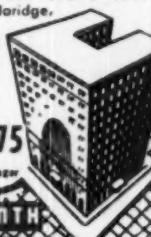

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## Electric Sewer Cleaning

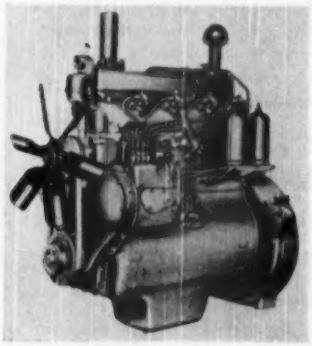
The O'Brien Mfg. Co., 5016 No. Austin Ave., Chicago 31, Ill., is making an electric sewer cleaning machine that cleans any sewer line up to 10 inches in diameter, 200 feet long. The machine removes mud and other obstructions and cuts roots.

Portable and easily moved from job to job, the machine requires no manual effort on the part of the operator—not even cable feeding.

## Goodrich's New Fire Hose

The new Fire King municipal fire hose made by the B. F. Goodrich Co., Akron, Ohio, is 12 to 15% lighter but 50% stronger under a 600-pound test than standard hose tested at 400 pounds. Additional strength and lighter weight have been made possible by the use of a chemically produced fiber which is used as the filler cords in the fire-hose jackets. It is unaffected by mildew, mild acid, or alkalies.

## International Harvester Redesigns Diesel Series



**The International UD-9A automotive engine weighs 1,500 pounds. Dimensions, less air cleaner, are 42½ inches high, 24 inches wide, 41½ inches long.**

The International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., has redesigned its four-cylinder "9" series of diesels to achieve greater power output, smoother operations, and longer service life of parts.

New features of the basic "9" engine include: redesigned pre-combustion chamber and piston; the "A" series I. H. fuel injection pump; simplified injection nozzles; counterbalanced crankshaft and new connecting rods. The improvements establish a higher compression ratio: 15.7 to 1 compared to the former 14.4 to 1.

As a power unit equipped with air cleaner, radiator, fan, and clutch the UD-9A delivers 62.5 hp at 1,600 rpm under intermittent load. This compares with 53 hp at 1,500 for the previous model.

The UD-9A automotive engine operates at governed 1,800 rpm, delivering 70 hp at that speed. Both power unit and automotive engine have the inbuilt International gasoline conversion all-weather starting system and full-pressure lubrication of moving parts.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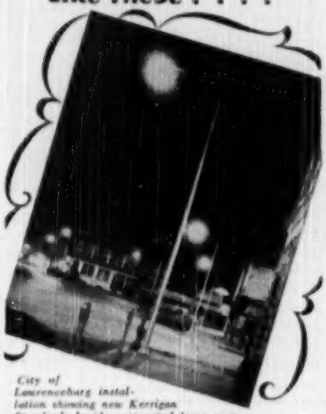

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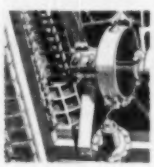
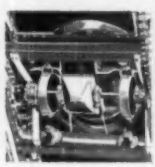


**AUTOMATIC-LOCKING BRAKES** — Hold crawlers against downhill movement when working on grades, a feature operators appreciate. Brakes lock instantly, are released by air rams.



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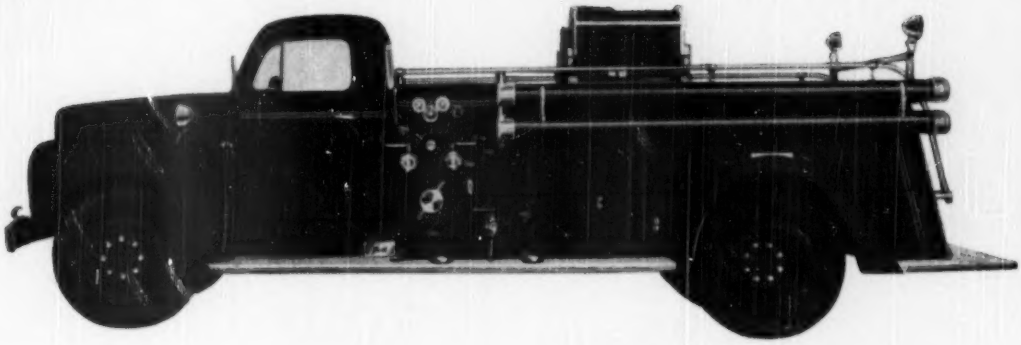

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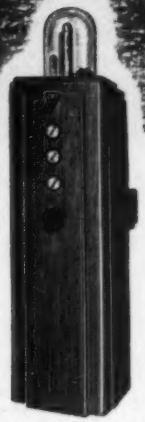

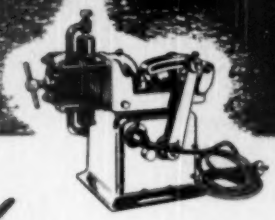

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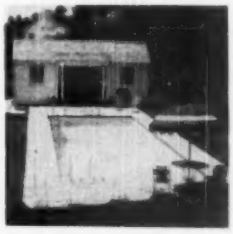

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